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# BETTER FRUIT

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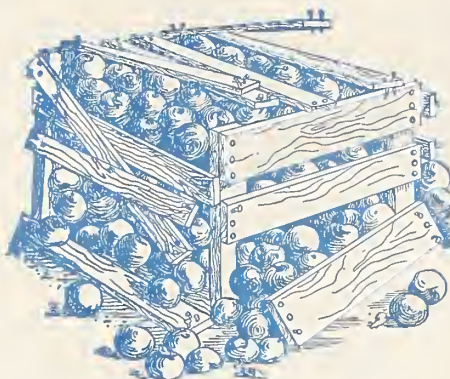


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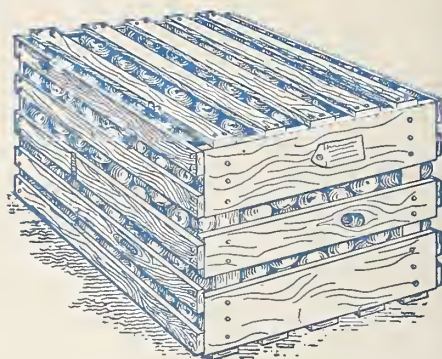
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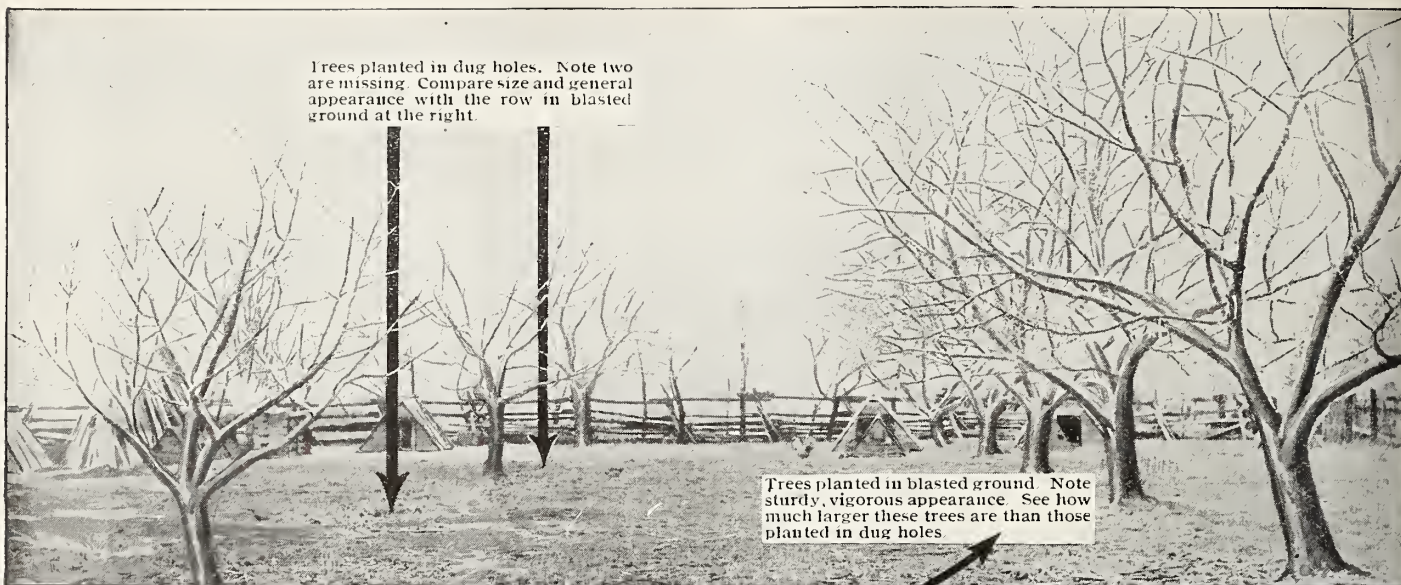
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Trees planted in dug holes. Note two are missing. Compare size and general appearance with the row in blasted ground at the right.



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WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



Trunk of tree planted in blasted bed. Hardpan broken up, giving roots ample room for development.



Trunk of tree planted in same soil, without blasting. Note how hardpan has forced roots to surface and observe effect of lack of food.

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# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## League-State Inspection System

By O. T. Clawson, Inspector, Wenatchee, Washington

**D**URING the winter of 1914-1915 there developed in the Wenatchee Valley an organization of growers known as the Wenatchee North Central Washington Growers' League. This is a non-partisan organization of growers, with membership in all fruit-selling organizations and in all communities, including in its rolls a large per cent of the ranchers of the district. This league was formed as an agent of the organized growers in dealing with selling agencies operating within the district. The first aim of the league was the establishing and enforcing of a standard grade and pack for the Wenatchee district. The horticultural code of the state specified the interpretation of grades and made possible the enforcing of those grades, except that no provision was made for financing a corps of inspectors sufficient to carry on the work.

A contract was entered into between the Growers' League and the shippers of the district whereby the latter agreed to pay to the league one cent a box on all apples shipped by them. The fund so established to be used for the establishment of a system of uniform inspection. All the fruit organizations and agencies except two entered into this agreement, thus guaranteeing almost universal support from the agencies. The bankers, business men and newspapers of the valley gave the movement their unanimous support. It was largely through this loyal support that the move was able to survive and accomplish the work that has been done. With this assurance of financial and moral support this office was given the task of developing a plan of inspection to be effective over four counties. The plan as developed was an outgrowth of a combination of ideas and plans, and meant to cover as nearly as practicable the recognized value of advisory field work and the absolutely essential final check of warehouse inspection and check inspection for the development of uniformity.

The district was cut up into ten subdivisions, the boundaries of each determined by location and points of shipment. Over each of these subdivisions a field inspector was put in charge, and where deemed necessary assistant field men were supplied. In every case the field man was a trained horticulturist and with but one exception had had considerable experience as an inspector. These men passed examinations under the State Department of Agriculture and received certificates of

authority giving them full power to enforce the horticultural code of the state. Within his particular territory each man was given complete authority except as regarded the inspector at large and any check inspectors sent into the territory. All other inspectors working within the territory were under his direct orders and supervision. The field inspectors, each furnished with a Ford car, began work July first, making an orchard survey and crop estimate for the district, and during the month of July and the first half of August covered every commercial orchard in the four counties. They not only secured the desired information but were able to give the orchards of the district the most complete inspection they have ever had and to advise with the ranchers as to the solutions of their various troubles.

No attempt was made to cover the inspection of soft fruit. During the early part of the shipment of apples the field inspectors were able to pass upon all fruit going out of each district without extra help. As the work increased additional men were placed in each district under the field man's supervision, until during the height of the season there were fifty-three men on the force. Where there was sufficient tonnage passing through one warehouse to justify it, the complete time of one inspector was given that warehouse. In a few of the larger warehouses it was found necessary to use two men continuously throughout the rush. Wherever possible, however, each man was used to cover more than one point, in this way permitting a reduction in the size of the force and developing greater uniformity among the different shipping concerns.

Preceding the main rush there was considerable shifting of inspectors in order to increase the uniformity of action and broaden the viewpoint of each man, as well as to eliminate the likelihood of personal preferences and influences. With the coming of the rush the shifting of inspectors was practically discontinued, and the work of field inspectors, check inspectors and conferences depended upon to keep the grade as uniform as possible throughout the district. In any warehouse where more than one inspector was employed, one of them was the superior. Each shipping point requiring more than one inspector had one of them designated as chief and his decision had preference over any warehouse inspector, but in turn was subordinate to that of the field inspector,

and his in turn to the check inspector and the inspector at large. This provided a regular gradation of authority and a correspondingly well-developed system of checks. In Wenatchee, Cashmere and wherever else it was possible for the inspectors to get together, weekly meetings were held for the discussion of topics of common interest.

The supervisory work and check inspection of the field man was but a portion of his duties. Perhaps his most effective work was that of advising and assisting the ranchers in putting the fruit up to the standard desired. Any fruit rejected at a warehouse was reported to the field man operating in the district and it was his duty to visit the packing shed of the unfortunate or erring rancher and show him the difficulties with his grade, so that there need be no repetition of the rejection. In turn the field man kept his warehousemen posted as to the conditions found at the ranches. Each warehouse inspector was duly appointed by the State Department with jurisdiction over grade and pack. A certificate of authority and a badge denoting such were given each man. A stamp was furnished him with a number corresponding to the number of the badge. Each box inspected by any man was stamped with the number of the inspector and the date of the inspection. The same was required of check inspection and inspection in and out of storage so that any inefficiency could be traced directly to the responsible party. Certificates of inspection were made in triplicate for each car, one being sent to the league office for future reference and the first two being given the shipper. One of these two was generally attached to the bill of lading and the second retained for the shipper's files.

In general the results have been very satisfactory. The season's experience has disclosed some phases of the system which will need slight remodeling. The field force should be increased, and at least in remote districts be given the added duty of passing on the fruit before delivery. This method was tried in one district this year and the results were such as to indicate that it can be made entirely feasible. Whenever the field inspector examined and passed a bunch of fruit he stamped all of the boxes rather than merely the boxes opened. When the fruit came into the warehouse all unstamped boxes were known to be uninspected and were examined at that point. The stamped



ones were subject merely to check inspection.

A corps of men should be placed in the field by March first and maintained throughout the growing season in order to help in preventing the production of inferior fruit rather than merely to prevent the sale after it is once produced. It is believed that an efficient corps of men will be placed in the field

at that time. Central packing sheds are being advocated and several give promise of starting operations next year. The development of the central packing-shed idea will mean the simplifying of inspection, economy to the grower and a gilt-edged product. Two such have been operated successfully this year and will expand quite extensively next year.

the parts firmly together. The wounds incident to joining the tops of the small trees to the trunk of the large one should be well covered with wax, to prevent drying out. Sometimes cord is tied around the trunk to aid in holding the tops of the young trees in proper position.

## Bridge Grafting Fruit Trees

[Office of Information, U. S. Department of Agriculture]

**B**RIDGE grafting, the use of scions or small limbs to connect the cambium above and below a large wound or girdled strip, may be practiced successfully on almost any kind of fruit tree that can be propagated readily by grafting. It is used more often with the apple than any other fruit, but pear trees often are treated in this way, especially in certain sections. There seems to be no reason why the method should not also be successful on plums and cherries, according to Farmers' Bulletin No. 710, Bridge Grafting, just issued by the U. S. Department of Agriculture. Peaches, however, graft less readily and there may be some question as to the usefulness of the method in the case of this fruit. While seldom used on shade or other ornamental trees, the author, W. F. Fletcher, writes that this method of grafting probably would prove successful in overcoming certain types of injuries to them.

Mechanical injuries which may be remedied are usually inflicted by animals, by burrowing insects or by implements carelessly used. Various diseases, such as pear blight, also cause local injuries which may call for bridge grafting. The trunks of pear trees are not infrequently completely girdled and killed by pear blight. Bridge grafting, if done in time, however, may save the tree. The method also is useful when large areas of bark have been killed by sunscald or other troubles. The author of the bulletin points out, however, that protection of trees against rabbits and mice and disease is, of course, better than having to bridge graft to overcome damage.

To be effective, bridge grafting should be done in the spring before growth starts, though sometimes it can be done after growth starts if dormant scions for the purpose can be secured. Prepare the wound in the tree by cutting away all dead tissue and thoroughly cleansing the injured parts. If possible, sterilize by washing with a solution of bichloride of mercury, copper sulphate or some other antiseptic. The irregular edges of the bark above the girdled tract or wound should be cut back into an even edge, far enough from the wound to make certain that healthy cambium is under the bark. For the grafting, select scions from wood of the previous season's growth, either branches which grew the preceding season or watersprouts that are only a year old. The scions should be

a little longer than the space which is to be bridged, so they will arch slightly over the central part of the wound. Bevel the scions at each end on the same side of the seion with a long sloping cut so that the wedge-shaped ends thus formed will be relatively thin and permit their being thrust well under the bark without danger of separating it unduly from the cambium at the points of insertion. The placing of the scions will be facilitated if the bark at the margins of the wound is slit for short distance at the points where the ends are to be inserted.

In placing the scions it is of the greatest importance that the cambium of the scions which is exposed in the sloping cuts at the ends be brought into intimate contact with the cambium that lies under the bark at the margins of the wounded area. The union of scion and tree can occur only where the cambium layers of the two come together. The scions may be secured in their proper positions, if need be, by driving a small nail through each end into the trunk. This will aid in drawing the cambium of scion and trunk closely together. The operation is completed by thoroughly covering the area occupied by the ends of the scions and the margins of the wound with grafting wax, strips of waxed cloth, or by some other means that adequately will prevent these parts from drying out. Some operators cover the entire wound, scions and all, with melted wax. Where the bridged portion is below or near the ground, many operators conserve moisture by covering the grafts with earth.

Where the wound is so large as to make ordinary bridge grafting impossible, another method of bridging may be used. Two-year-old trees are planted about the base of the injured tree and their tops grafted into its trunk above the girdled space, which has first been cleaned as in the other method. As the tops of the small trees are too large to manipulate readily in the manner described for scions, V-shaped vertical grooves extending through the cambium are cut just above the wounded area in the bark of the tree to be treated. The tops of the small trees are shaped to correspond with these grooves. The two are then accurately fitted together in such a manner as to bring the cambium of one into contact with that of the other. Small nails may be driven through the tops of the trees into the trunk, to hold

## Contact Poisons and Green Apple Aphis

[Office of Information, U. S. Dept. of Agriculture]

**T**HE effectiveness of different contact poisons both alone and in combination with other substances in killing the green apple aphis has been made the subject of extensive field and laboratory tests by the entomologists of the United States Department of Agriculture as reported in Department Bulletin 278. Extensive experiments were made with 40 per cent nicotine sulphate, kerosene emulsion, anthracene emulsion, naphtha soap, laundry soap and fish-oil soap, both alone and in combinations. In certain cases in order to provide a stomach poison in combination with an aphicide, arsenate of lead was used in connection with the nicotine sulphate, and both arsenate of lead and arsenate of calcium were used with kerosene emulsion without lessening the killing action of the nicotine sulphate on aphids. It was found, however, that where arsenates are combined with kerosene emulsion they should not be mixed and allowed to stand for over a day or so, since there is a slight breaking down of the soap. As the specialists point out, insecticides in general should not be combined until they are to be used.

According to the results of these experiments a 10-per-cent kerosene emulsion should prove effective against the green apple aphis. The kerosene emulsion made either with 66-per-cent stock, 10 per cent, or with naphtha soap and cold water, seemed to kill all the green apple aphids. The 40-per-cent nicotine solution, with a dilution up to 1 to 2,000 combined with soap, were likewise effective aphicides. Anthracene emulsion, 3 per cent, gave satisfactory control, and at this strength caused no foliage injury. Anthracene emulsion, 5 per cent, burned the foliage badly. The kerosene emulsions under 10 per cent were not satisfactory, neither were the soaps at the strengths tested, except that fish-oil soap, 5 to 50, killed 90 per cent of the aphids. Laundry soap, 3 to 50, was effective against the young aphids only. Arsenate of lead alone, as was to be expected, had little or no effect upon the aphids. The combination of arsenate of calcium with kerosene emulsion is not a desirable one, since an insoluble calcium soap is formed, thereby releasing some free kerosene.

Strawberry growers of Kennewick and Richland have agreed to a consolidation and will market all of their berries through one selling concern, thus cutting out self-competition, a step in the right direction. More of this work is in order, and when more of it is done fruitgrowers will realize better prices.



# Concerning the Pocket Gopher and Destructive Habits

By Theo. H. Scheffer, Assistant Biologist U. S. Biological Survey

THE pocket gopher is an animal of wide distribution in the United States, being found almost anywhere west of the lower course of the Mississippi River and the eastern border of its valley in the upper course. There is also an isolated group of these animals in parts of three states on our southeast coast. The small ground squirrels of the prairies and the true moles are sometimes locally known as "gophers."

The gopher burrows in the soil of wild lands and cultivated fields, constructing a labyrinth of tunnels that have no permanent exits above ground. The work of extending these runways is usually done at night or in the early morning and late evening, when, at intervals, the busy little animal dumps on the surface of the field the loads of earth it has brought up, through short lateral gangways, from its excavations below. These accumulations of soil soon assume the proportions of conspicuous mounds ranging in bulk from

a few quarts to more than a bushel of dirt. Some of the Pacific Coast moles heap up similar mounds, but a little study of detail will enable the observer to readily distinguish them from those constructed by the pocket gopher. The former are built up, volcano fashion, by successive upheavals beneath and through the center of the mound, the earth, if not too dry, falling down the slopes in the form of the plugs that were forced up from the tunnel as through a crater tube. The earth mounds of the gopher, on the other hand, are more or less semi-circular or fan shaped in outline, with the plugged opening through which the dirt has been carried out, on one side. In the construction of these mounds each successive load of earth was piled on top of the one previously brought out, or to the right or left of it. Associated with the mounds built by the mole there may be upridgings of the sod or soil crust where the little animal has plowed along just beneath the

surface in search of food. The runways of the gopher are all too deep down to produce such ridges.

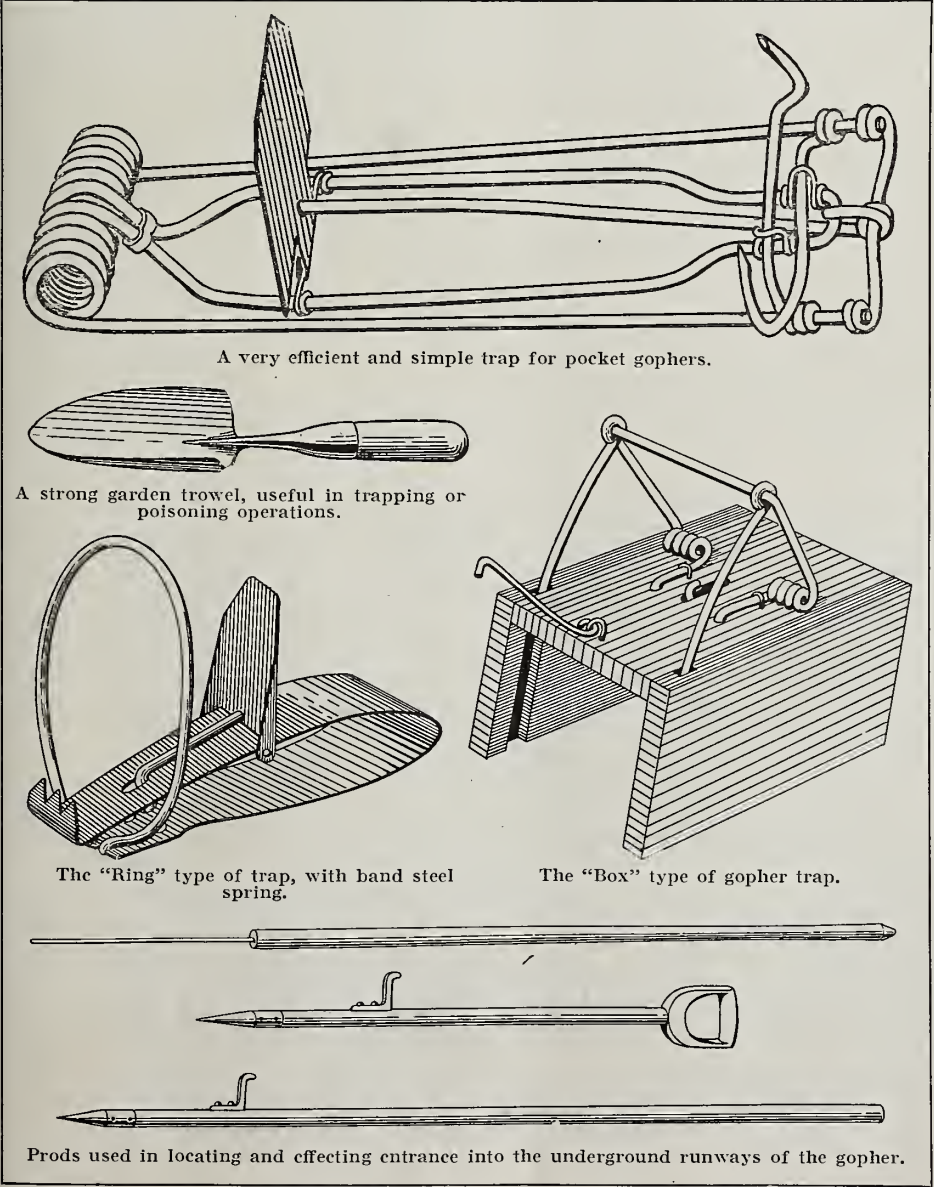
The gopher is not a prolific breeder. It rears young but once a year—in the early spring of our temperate latitudes. The number of young at a birth will average four or five. They grow and develop fairly rapidly and by fall are scattering out and digging runways for themselves.

The natural food of the pocket gopher consists mainly of the roots and underground stems of the plants growing wild in its habitat. The search for these results in the long and devious windings of the gopher tunnels we find in our fields. Stems and leaves of certain plants are also cut off above ground and pulled down into the burrows to serve as food. In some parts of the country, at least, considerable quantities of root sections are stored in underground chambers connected with the tunnels. These are usually for winter use, though there may be other times when stores are drawn upon because of temporary food scarcity.

With the cultivation of the soil by man has come the substitution of various edible roots and tubers for those of the original wild plants destroyed by the plow. These new supplies being usually more abundant and constant than formerly, the gopher has found conditions of life easy and as a result has, in recent years, greatly increased in numbers in some agricultural districts. Following this increase such crops as alfalfa, clover, potatoes and garden truck have suffered much from attacks on their root systems and from the presence of the mounds, which cover up parts of the crops and interfere with harvesting.

Much damage has been done to young orchards by the pocket gopher. Instances might be cited where entire acreages of considerable extent have suffered the loss of almost every tree as a result of the roots being gnawed off. Nursery stock in the field is also at times seriously damaged in a similar way. In the irrigated fruit districts, too, the tunnels of the gopher penetrate the ditch banks, causing waste of water and often serious breaks and washouts when the smaller leak has not been discovered in time to stop the outflow.

All that is required to keep the gopher situation in hand in any community is a well-directed campaign of poisoning or trapping at the start, followed by reasonable vigilance and co-operation with neighbors. The animals are easily trapped, and will take certain poisoned baits in a manner that indicates the possession of little shrewdness or cunning in scenting out danger along this line. Poisoning and trapping may be followed successfully at any time when the gophers are active in throwing up fresh mounds, a





dry period or one of hard freezing weather being least favorable for the work.

The very best poisoned bait we have so far discovered for pocket gophers consists of sections of sweet potato, parsnip or carrot treated with powdered strychnine. The vegetable used should be cut into pieces about as thick as one's little finger and approximately an inch long. It is best to mix the strychnine with about one-tenth its bulk of saccharin in order to partially disguise the bitter taste of the poison. The mixture may then be put into a pepper box and dusted over the bait while the pieces are still fresh and moist. One-sixteenth of an ounce of strychnine is sufficient for two quarts of the bait. Stir the pieces about while dusting on the poison so that the latter may be evenly distributed. If the bait has dried so that the poison will not readily adhere wet the cut vegetables and then drain until the pieces are in the proper condition. The bait must not be sloppy.

Another very good way of preparing the bait is to stir the powdered strychnine and saccharin thoroughly into a small quantity of rather thick laundry starch, made up just as for starching clothes and allowed to partly cool before using. Pour this over the bait and stir until all the pieces are fully coated with the poisoned paste. Not more than one-third of a teacupful of the prepared starch will be needed to coat two quarts of the bait. It is best to let the starch coating dry for a short time so that soil particles will not adhere to the bait when it is put out in the field.

In putting out the bait entrance into the gopher's burrow may be effected by the use of a sharpened prod about an inch in diameter. Types of such prods are illustrated herewith. The one that is made of a broom handle, with a piece of one-quarter or three-eighths-inch iron rod fitted into the large end and projecting about twelve inches, will give good satisfaction in ordinary soils. Both the rod and the handle should be bluntly pointed. The former is used as a seeker, the latter for enlarging the opening where poisoned bait is to be introduced into the gopher's runway. To penetrate hard soils a prod with a footrest attached may be needed. The course of the burrow can be located by prodding the soil in a line between two adjacent mounds, or, if the pile of earth has been freshly thrown up, a better plan is to push the dirt aside with the foot and find the lightly-plugged lateral leading into the runway. In either case push the bait well into the opening. It is immaterial whether the latter be closed or not after introducing the bait. It is good practice to obliterate all mounds with hand rake or drag of some sort a few days after putting out the poison, so that if any gophers escape the first attack the new mounds they construct may be readily detected.

Gophers are more easily trapped than perhaps any other animal pest of

our agricultural districts. The ordinary type of steel trap, No. 0, may be used, set either in a lateral or in the main runs; but a specially designed gopher trap will usually give much better results. Set singly, these traps must be placed in the lateral, or short branch leading from the main burrows to a point where dirt has been recently pushed out. If entrance is effected into the main tunnel two traps must be used, one facing each way. One or more types of gopher trap may usually be found on sale at a local dealer's. The simpler and more compact the device the better. Those made entirely of metal are to be preferred to those having some wood in their construction. Explicit directions for setting any particular make of trap are, or

should be, furnished with the trap when sold. In placing either one of the metal traps shown in the illustrations accompanying this article, find a freshly-constructed lateral from the gopher's burrow to a new mound of earth, as directed in the account of poisoning operations. Enlarge this short side branch by hand or with the plant trowel and push the trap back for its full length, "sawing" it into the ground so that it will remain in position when the gopher approaches. These small traps will need to be secured by wire and stake to prevent their being dragged back into the windings of the runway. The box type of trap is intended to be set snugly up against the end of the open lateral from a burrow.

## Disposal of Fruit By Auction

By Arthur M. Geary, Portland, Oregon

FOR over a hundred years most of the foreign fruits and a large percentage of the vegetables consumed in London, Liverpool, Glasgow, Hull, Bremen, Hamburg and a number of other European cities have been sold under the hammer. In this country auction selling of fruit began at about the time of the Civil War. Sailing vessels from Southern Europe and the tropics, loaded with oranges, lemons, bananas and other fruits, were sold to the trade of Boston, New York, Philadelphia and other cities as they gathered on the wharves,—often the auctioneer standing upon a stand under a raised umbrella. Horatio Harris, the founder of H. Harris & Company of Boston, and Edward Brown, founder of Brown & Seccomb, auctioneers, which is one of the three firms now operating in New York, were the pioneer auction sellers of the United States.

In New York today the three auction houses own a ten-story building at 204 Franklin Street, where Sicilian lemons, Spanish Almeno grapes, Florida oranges, and grapefruit and pineapples from Cuba and the Isle of Pines are sold at auction. Samples of cargoes and cars of these fruits are put upon display in the Fruit Auction Building. From estimates of the quality and value of these samples, the trade of New York, composed of seven or eight hundred jobbers, brokers, hotel agents, large retailers and commission merchants make their bids in the sales auditorium that are found on the floor above. A great many of the offices of firms connected in some way with the fruit business are located in the Fruit Auction Building.

The bananas are the only fruits that are still sold after the fashion of the sixties. As bunches of bananas are carried from the holds of the vessels and loaded upon wagons, buyers stand around and judge of the quality of the fruit. When a wagon is loaded, the auctioneer, who operates from the bridge of the ship, auctions it off to the highest bidder. The United Fruit

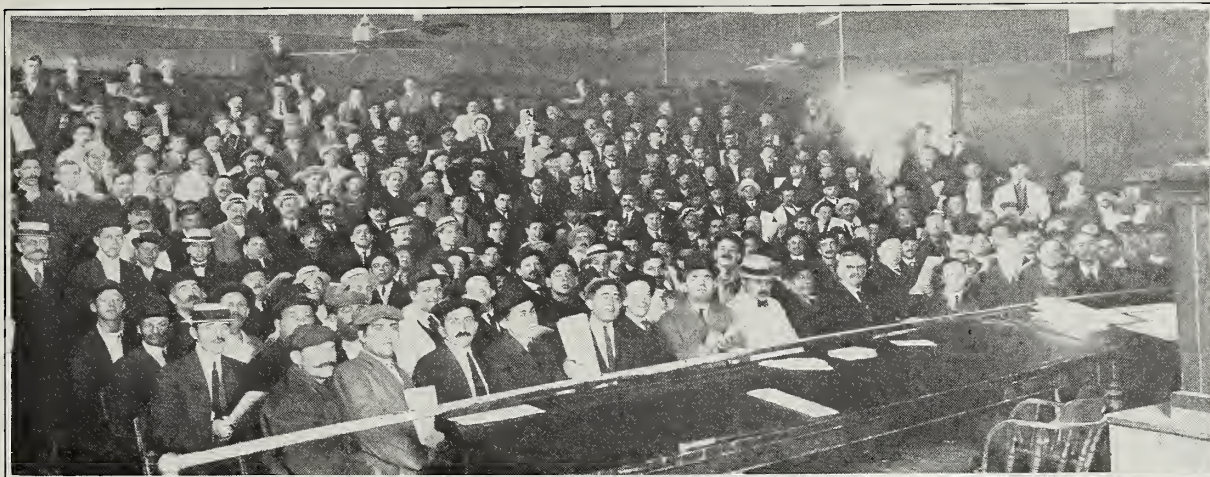
Company, during the last few years, has been using this method of distribution in New York.

The fruit from the Pacific Coast that is consumed in the New York district, which embraces a population of eight millions or more, is unloaded on Erie Pier, which is also known as Pier 20. The great dock is 800 feet long and two hundred feet wide, heated by steam pipes in winter and cooled by a ventilation system in summer. All the fruit cars from California, Oregon, Washington, Idaho and Montana arrive at the terminal yards in Jersey City and are towed across the Hudson River on scows during the night to Erie Pier. Here great gangs of men work through the night at unloading and opening sample boxes. Different from the practice at the Auction Building, whole cars are placed where the trade can view them. If a buyer desires he can open all the boxes, but generally he is satisfied with viewing the opened sample boxes.

When the trade of New York is turned loose among the fruit in the morning, every car and every lot of fruit in every car can quickly be located by numbers and description found in the daily catalogs that are distributed free. The actual bidding on Pacific Coast fruit takes place in the two sales auditoriums, located on the second floor of Erie Pier.

One of the principal functions of the auction houses is to advance cash to the agents of the growers, wherever they may be. Within twenty-four hours after a car is auctioned off, a check is handed to the agent who had the car sold, and there is no reason generally why the check should not be mailed on to the grower or the grower's association at once. The auction houses must wait for their money, as the bulk of it is sold on ten, fifteen and thirty days' credit. By a carefully built-up system of extending credit, the auction houses handle millions with the loss of but a few hundred dollars from bad bills.





The particular auction auditorium on Erie Pier where the pears, cherries, prunes, plums and grapes that are shipped to New York from the Pacific Coast are sold.

The California Fruit Growers' Exchange, which handles over sixty per cent of the orange and lemon crop of California, have made the auctions their exclusive means of distribution in twelve large cities. If a jobber who lives in one of these cities desires to buy a car f.o.b. in California or in any way except through the auction, he is disappointed. The Exchange insists that he compete with the little jobbers, the brokers and large retailers and aid them in the competition that sets the price. The California Fruit Distributors, who handle forty per cent of the grapes, pears, cherries and plums shipped from California, follow the same policy in a still greater number of cities, as do the Mutual Orange Shippers' Distributors, which is the largest rival of the Exchange in the citrus fruit-shipping business of California.

The Florida Citrus Exchange also uses the auction system in selling its fruit,—oranges and grapefruit. The

rest of the tonnage from Florida is sold both at auction and at private sale in the large cities. A number of the jobbing firms of New York and other cities make a business of buying Florida oranges f.o.b. and selling them through the auction. In such cities as Boston, Philadelphia, New York and Pittsburg it is estimated that eighty to eighty-five per cent of the Florida oranges and grapefruit are sold at auction, the rest being handled by the jobbers through their own stores.

The great bulk of both the box and barrel apples are now sold at private sale through the stores of the jobbers. The apples from the Northwest arrive on Erie Pier along with the fruit which are sold at auction. Here they are taken charge of by the jobbers and commission men.

In Boston, about a third of the cars of apples shipped there this season were sold at auction by H. Harris & Company, the jobbers handling two-thirds through their stores. In New

York and Philadelphia only occasional cars of apples were disposed of under the hammer during this last winter. In Pittsburg, Cincinnati, Kansas City and a number of the largest interior cities occasional cars were sold under the hammer.


The Department of Markets of New York, under Director John J. Dillon, has opened an auction for barrel apples. Sales were held in the orchards at Gardiner and Red Hook last September and at the Auction Building daily during the winter. The percentage of New York barrel apples disposed of in this way during the past season, which is the first of its operation, has not been large.

A news story is current, although not verified, that the Rogue River fruitgrowers are willing to make some arrangements in connection with Hood River for the purpose of marketing the Newtown crop in an endeavor to cut out unnecessary competition between these two districts on their Newtowns, which is the principal variety grown in both sections.



Erie Pier, New York, where all the fruit that is shipped across the continent to New York from California, Washington, Oregon, Montana and Idaho is delivered by the railroads.





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## Spraying Controls Peach-Leaf Curl

Oregon orchardists are given assurance that correct spraying methods will control peach-leaf curl. The kind of spray, time and methods of application, and other important data are outlined in the following paper by H. P. Barss, head of the Plant Pathology Department of the O. A. C. Experiment Station:

"Peach-leaf curl is a disease which undoubtedly causes thousands of dollars of loss each year in the State of Oregon. Practically all of this loss is unnecessary, since this disease can be satisfactorily controlled with one spraying given at the proper time of year, as the experience of a great number of growers in all parts of the state indicates. This article is written for those who have failed in the past to control this disease and for those who will have this disease to contend with as their newly-planted orchards get a start. The writer is confident that, barring accidents, any peach grower can control this disease to his own satisfaction if he follows carefully the directions set down in this article.

"Peach-leaf curl is a disease caused by a fungous parasite. The infections of this fungus occur early in the spring just as the tender young leaf points are emerging from the buds and the infections are particularly bad when the weather is moist and warm just at this stage. Some varieties of peaches are much less seriously affected than others. When the delicate infection threads of the fungus have penetrated into the new leaves they

spread all through the leaf tissue and the leaf becomes distorted, abnormally thickened, and of an unnatural color. The whole leaf may be affected; in fact, a whole twig may be affected, but in other instances there may occur only a few separate patches of leaf surface affected by the disease. By the middle of the spring the surfaces of these distorted leaves become powdery with the spores or reproductive bodies of the fungus which are being discharged at this time. These are carried by air currents all through the orchard and will eventually result in the infections of the next season. After discharging the spores, the leaves that are affected shrivel up and hang, dead and brown, to the branches for a long time. Great injury is done where a large percentage of the leaves on a peach tree are affected even though the tree may put out a new growth of leaves. The vitality of the tree and the quality and yield of fruit are greatly reduced. Furthermore, a tree may die from the effects of the disease when it suffers two or more successive severe attacks.

"Years ago it was found that by spraying the trees thoroughly with bordeaux mixture 4-4-50 or with lime sulphur 1-10 just before the buds began to open, this disease could be controlled. A good many growers, however, wait until the last minute before making the application and in a great many cases find the weather conditions such that spraying is impossible at that time. Consequently delayed application is often made very soon after the buds begin to come out, but unfortunately in such cases a great part of the infection has already taken place and

practically no beneficial results come from this delayed spraying.

"It has been found that while spraying immediately before the buds begin to open does control the leaf curl, yet a spray given a week or more before will have exactly the same effect. Recent experiments by the Cornell University Experiment Station, even, indicate that spraying any time after December 1 will be effective if thoroughly done. Experiments are now under way at the Oregon Experiment Station to determine whether or not this is true under Oregon conditions as well. Whatever the results of these tests may be, it is the experience of Oregon growers that a thorough application given within two weeks before the opening of the buds will have successful results. We recommend, therefore, at the present time, that peach growers spray their trees in February a week or two before the buds are expected to begin to come out.

"If the presence of San Jose scale in the orchard is suspected, use lime sulphur 1 to 10. If not, use bordeaux mixture 6-6-50. Successful control, however, cannot be expected unless the work is thoroughly done. Every bud must be covered with the spray material. This is not an easy task, but the results are worth the effort. A mist spray under considerable pressure will generally give the best results."

## Lead Arsenates Differ

Lead arsenates are sold for spray purposes as acid or lead hydrogen arsenate and also as basic lead arsenates. These materials differ in some essentials to the extent that users of them in practice should be able to distinguish them, says Professor H. V. Tartar, who has carried out the most exhaustive research work with arsenates of lead so far reported in this country. Only by knowing something of their identity and properties can the user be able under difficult and special conditions to avoid disastrous results. Some of the differences are pointed out as follows: The acid salt is fluffy, somewhat like wheat flour, and is usually without crystals, although under certain conditions crystals appear. The particles are of lower specific gravity and settle from the water or other liquid of the spray more quickly than the basic forms. The basic form is granular in appearance and has not been observed to crystallize. Although the size of the separate particles of both is practically the same, the basic form particles have a tendency to collect into groups, thus becoming heavier and settling more rapidly.—O. A. C. Bulletin.

The Wenatchee district, according to the Growers' League, which has kept a careful account of the number of cars inspected and shipped, reports that the Wenatchee district, up to the middle of February, has shipped 4,456 carloads of apples.

Hood River Apple Growers' Association, on February 23rd, reported their tonnage for the season 1915-16 to be 374,419 boxes. Shipped to date, 345,455 boxes; on hand, 28,953 boxes, or less than 50 carloads remaining.



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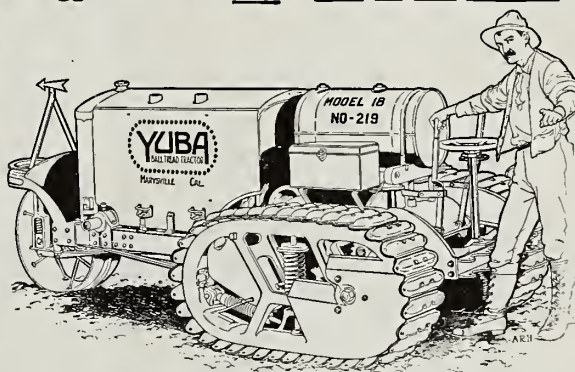
Success means getting the soil in good humor, so it will produce big crops and will not be exhausted.

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## The Codling Moth

Presented at California Fruit Growers' Convention, Palo Alto, July 28, 1915, by A. L. Melander, Pullman, Washington

HOW many times shall we spray for the codling moth? That is the question. Whether we believe in strong or weak spray, misty or driving application, low or high pressure, neutral or acid arsenate, and whether we supplement the spraying with other control practices, such as cultivation, thinning and banding, we are all interested in how often, or rather how few times, and when to spray. Ten years ago fruitgrowers in Washington were averaging seven summer sprayings for the codling moth, using hand pumps at a pressure of fifty pounds, Vermorel nozzles, long spray poles, strong paris green and spraying from the ground, and getting 85 per cent of worm-free fruit to repay their trouble, the culls being for the

most part calyx wormy. Contrast with this method the system which these same growers now practice: Power sprayers maintaining 250 pounds pressure, clipper nozzles set with a crook-joint to 8-foot rods, weak arsenate of lead and the spraying done from an elevated platform. The two methods have little in common beyond aiming to check the codling moth, yet the growers now are able to eliminate half their applications and add an extra 10 per cent to their crop. The change resulted simply from applying the principles of efficiency to this phase of orchard management.

A decade ago when many growers were spraying twice each month, we showed that in the North the codling moth worked in well-defined periods.

In the irrigated districts no apples became infested during the first half of July, in which case a spraying on July 1st was so much effort wasted. This eliminated one spraying. The substitution of arsenate of lead for paris green gave an adhesive material good for a month or more, thus eliminating other sprayings. Hence a spraying when the first brood hatched, another after mid-July at the onset of the second brood and another about September 1st for late second brood and a partial third brood, took care of the difficult part of the program. The object of these three application is to coat the fruit with poison in advance of the hatching of the worms so that the first meal taken by them will be their last also. Apparently then these





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three sprayings should protect the crop. In practice, however, it has been found that they come far from fulfilling this purpose. In one experiment even, several years ago, we found exactly as many worms when these three sprayings were given as when no spraying at all was done. As the wormy apples were mostly entered at the calyx a spraying system to be successful must protect that part of the fruit. As far as the codling moth is concerned an apple consists of two parts: a large outside comprising the tough skin and a small, attractive retreat at the calyx end. That this retreat proves attractive the wormy apples of any unsprayed orchard will show. Sometimes as many as nine out of ten worms will seek out this part of the fruit, which is the only part of the surface unprotected by an epidermis.

For a variable period, usually of about ten days immediately following

the blossoming of the trees, and at that time only, the calyx end of the apples can be poisoned. At that time the petals are out of the way, the sepals project widely open and most of the flowers which ultimately set fruit extend upward. The inner calyx, however, is protected by a close-fitting crown of about twenty curved, springy and hairy stamens. Since these stamens are stiff a penetrating spray is necessary to force the poison between them. This calls for a nozzle of the clipper type and for pressure. Since so many of the flowers point upward the spray must for the most part be directed downward. This calls for the crook-joint, and in the case of trees more than a dozen feet in height for the tower or elevated platform in addition. Since the time for this spraying is limited by the infolding of the sepals, there is no time for loitering. An unexpected spell of hot weather might close the flowers in three or four days. Hence the necessity again of high-pressure spraying, which is synonymous not only with efficiency but with speedy application as well. Some fruitgrowers overlook the fact that it requires a given amount of liquid to spray an orchard, whether applied at 50 pounds or at 250, and that at 50 pounds it takes a week do what 250 pounds accomplishes in a day. Penetration, therefore, is the keynote governing the calyx spraying,—a penetration nozzle, a penetration pressure and a penetration direction to the spray. Can the calyx cup be filled? Is it necessary to use a driving spray? Cannot excellent results follow the old method of using a mist application? Is not a driving spray wasteful or even injurious? These and a dozen other questions have been asked and answered.

Evidently there is a varietal difference in the structure of apple blossoms. Sometimes, as in the Baldwin, the stamens are very turgid and densely woolly, in which case it becomes practically impossible in orchard practice to force poison into the interior of every flower. Sometimes, as in the Rome Beauty, the blossoming is irregular, buds and old flowers occurring together. In this case the calyx spraying must be repeated. However, the application should be timed by those central flowers of each cluster which because most mature are the ones to set fruit. Usually the belated lateral buds can be ignored because ultimately they are thinned or drop off. Sometimes an orchard has a mixed planting of early and late varieties, which calls

for a repetition of the spray, for the spraying must be given when the flowers are in receptive condition. Sometimes, as in crabs, the flowers are thin stemmed and tilt over when hit by a driving stream. In all these cases it is difficult in orchard practice to fill the inner calyx cup and calyx wormy fruit must be expected. In the case of commercial Northwestern varieties it is not only possible but practical to fill every calyx cup and thus to destroy by means of this spraying alone the vast majority of worms that seek this part of the apple, whether they enter shortly after the spraying or not until the day of harvest. We have sorted the culls from many thousands of boxes of fruit, not only that experimentally sprayed but that also from the orchards of Western growers who have adopted this spraying system, and have invariably failed to discover calyx worminess. But on the other hand, in attempting to apply the system to New York conditions we have failed to penetrate into Baldwin apples, and, like other experimenters, have had 10 per cent or so of the wormy fruit entered through the calyx.

There has been much controversy as to whether or not the calyx spraying alone can protect an orchard. Abundantly it has been demonstrated in actual experience that this early spraying has given such satisfactory results that later sprayings would not pay for their application. Again, and perhaps even more frequently, other growers have failed to control the codling moth with repeated sprayings. There is no question that the calyx spraying is most important. Just how carefully or how poorly it is given will determine the loss at harvest. Numerically it should be worth as much more than all subsequent applications together, as the calyx worms exceed in number the side worms. Practically it is even more valuable, and for several distinct reasons. First, it undoubtedly destroys a certain percentage of leaf-eating worms which would have been side entering. Again, it is impossible to fill the calyx without wetting the sides of the blossoms, and this poison probably has some effect. But most important in the matter of practical control, late sprayings never afford their full expected benefit, for it is the instinctive habit of the codling worm to reject without swallowing such distasteful substances as the tough skin of the apple and with it the poison which coats this unnatural food.

For these and other reasons the most possible emphasis should be placed on thoroughness of the calyx application. The more complete the destruction of the early worms the fewer later-brood worms there would be with which to contend. Late sprayings at the best are unsatisfactory; they do not prevent "stings"; they are unsuited to waxy or oily-skinned varieties; they interfere with irrigation; they knock off fruit from heavy hanging branches; they are hard to time correctly; their effects are transitory and so they must

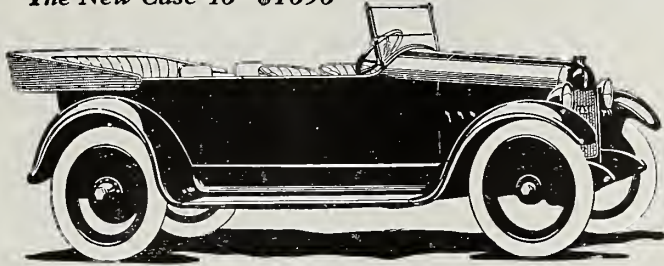


be repeated; they affect only the relatively few worms that miss finding the calyx end; they merely consume time, energy and money, for their actual benefit is small. This does not at all mean that late sprayings should be ignored, especially where thinning is not practiced, for sometimes they are highly essential. It means only that compared with the calyx spraying their combined value is small indeed.

How much does the grower risk who sets out to depend on the calyx spraying alone? The answer is that he loses his second spraying, but that need be all. The commercial orchardist offsets the second spraying by thinning during the time of the first brood, and when he also bands some of his trees he has a definite, double indicator of the number of worms escaping the action of the calyx application. If calyx wormy fruit is found it would be ill advised to depend on the single spraying alone, for it was not thorough. If all the worms are side entering he will have to make his own calculations. Generally speaking, he will have to balance the cost of the application against the following factors: a pair of codling moth have at most forty offspring; of these from four to sixteen or so alone can be reached by the late spraying, for the others enter at the calyx; of this limited number possibly half, but probably more, reject their first nibblings, and will enter the fruit in spite of the spraying; furthermore, whereas second-brood worms are scattered over several months, the effects of a late spraying wear off in a single month. Hence, for every first-brood worm that escaped there would be, roughly speaking, only about one or two second-brood worms that a later spraying could reach. The other eighteen or so would get into the fruit anyway or would be poisoned by the previous calyx application. Of course we all realize the danger of juggling with figures, but in actual commercial orchard experience these numbers are borne out in practice with surprising closeness.

Fruitgrowers generally feel uncertain as to exact dates for all but the first spraying and commonly depend on someone having a breeding cage to instruct them when to spray. Breeding-cage information is often misleading, for unless the cages are kept in the same environment as the insect the development of the codling moth is abnormal. Practically all of the first brood of codling moth are descendants of worms which spent the winter in the ground, the few exceptions coming from those over-wintering in rough bark, under bands, or in packing sheds. Obviously, the few worms above ground transform at a different rate from those a foot down in the soil, yet breeding-cage information is usually based on the easiest worms to obtain. A more exact determination can be had by watching for empty pupa cases on the soil beneath a wormy tree. The real beginning of the first brood of worms in the Northwest follows fully

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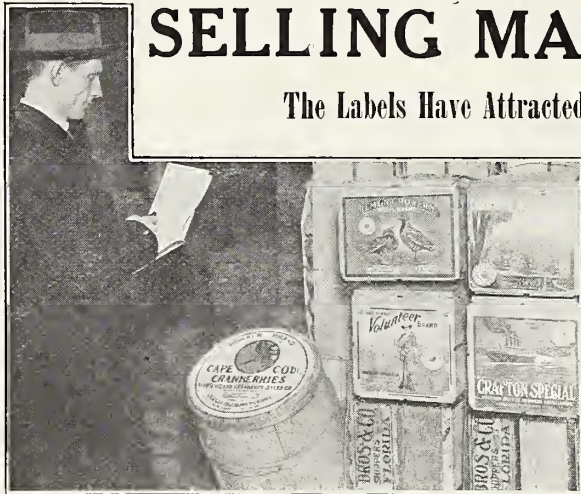
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six weeks after the calyx spraying, although precocious moths can be found during blossoming time. Although there is considerable variation in dating the first and second sprayings owing to fluctuations in spring weather year after year, yet by the time of the second brood the seasons average up with remarkable consistency. For instance, during four years at North Yakima the first worms of the second brood have hatched on July 19th, which fixes that as the calendar date for the third spraying. Therefore spraying dates for the third and subsequent applications, once determined, can be relied on in the future.

We have repeatedly had perfect results when using one pound of paste arsenate of lead to every fifty gallons, and have even carried the dilution to

one to seventy-five without lowering the efficiency of the spray. When the application is thorough two or more pounds to fifty gallons seem to gain nothing. Frequently apples whitened with spray become excessively wormy. It is not a concentrated spray, but a careful, uniform, thin coating that counts. Indeed, theoretically an increase in concentration might produce a decrease in efficiency owing to the selective feeding habits of the newly-hatched worms. By the same reasoning the poorer results following a combination spray can be accounted for, because the minute worms plausibly refuse to eat such unnatural and distasteful materials as bordeaux spray, lime, sulphur preparations, tobacco, soap or oils. By way of summary conclusion, the fight against the codling

moth hinges on the calyx application. Whatever the method of spraying, whether high or low pressure, or misty or coarse spray, the calyx application should receive the closest attention, for what is left undone then cannot be corrected by later applications.

### Black Spot on Baldwin Apples

A correspondent from Slatington, Pennsylvania, writes the Department of Agriculture asking the cause of small brown spots that run almost to the core in the Baldwin and King apples. Zoologist H. A. Surface answers as follows:

"Your Baldwin apples are evidently affected by the disease known as Baldwin spot. This is a black spotting that attacks the Baldwin and also the Jonathan. It is in part prevented by spraying two or three times during the summer with the bordeaux mixture. Spray with bordeaux and arsenate of lead just after the blossoms fall, and again a month later. Use one pound of arsenate of lead, three pounds of bluestone and four pounds of fresh lime in fifty gallons of water.

"I am aware that some claim that this cannot be prevented by spraying, but the Department of Agriculture has done this in some of the demonstration orchards in this state and has had conspicuous and excellent results."

### The "Why" of Gasoline Prices

Supply of crude oil increasing .6 of 1 per cent; consumption of gasoline increasing 27 per cent. Put very briefly, this is the why and wherefore of the advance in gasoline prices. It is the working of the inevitable law of supply and demand. In California oil fields last year there was an actual falling off in crude-oil production of over 14,000,000 barrels. The United States Geological Survey shows that the total 1915 production of crude oil increased only .6 of 1 per cent over that of the previous year. And yet 500,000 automobiles were put into use in the United States in 1915 and increased the gasoline consumption, for automobiles alone, fully 27 per cent over the consumption in 1914. Meanwhile thousands of gasoline engines and tractors are being put into service on our farms and ranches and depleting the available gasoline supply.

The January issue of the National Petroleum News—the organ of the independent producers—estimates that at least a half million new automobiles and trucks will be sold this season, so that in a few months not less than three million cars will be consuming gasoline. That will require a 30 per cent increase in gasoline production in order to maintain even the present balance between supply and demand.

Thus far this year production has run considerably less than normal. Just as was the case last year, the United States government suits against operators on unpatented lands is greatly limiting production and the severe January storms which wrecked hundreds of rigs in the California fields has further retarded production. The California State Mineralogist estimated a daily average loss in production of 40,000 barrels as a result of this storm damage.

Improved carburetors and improved methods of refining petroleum will undoubtedly relieve the gasoline situation from time to time, but in the final analysis the price of gasoline will be determined by the way the country's crude-oil supply keeps up with the ever-growing demand for gasoline. Just at present nature and the government are combining to limit the supply. Time may change all this and in the meantime we of the Pacific Coast can congratulate ourselves that we live handy to the California fields, where oil is still flowing fast and where we get prices that are still several cents a gallon below the Eastern average.





Trade Mark.

# Buy "Corona Dry"

One pound of "Corona Dry" will do the work of three pounds of Paste Arsenate and do it better

## Imitated but not duplicated

But economy is not everything. Efficiency is more important. What would it mean to you to have a spray mixture of standard strength and be absolutely sure that all of one spraying or of many sprayings was absolutely the same strength? Evaporation, difficulty of perfect mixing, make this impossible with a paste arsenate. You can have a standard efficiency if you use *Corona Dry*.

### *Largest and most progressive growers have rendered the verdict*

A large practical usage in every section of the country has proved that "Corona Dry" is unequalled in efficiency or as "easy mixing." It does not freeze, dry out or cake; always retains its original strength. A perfect mixture, a perfect standard of unvarying strength is assured with

# CORONA DRY

Arsenate of Lead

Patented June 30, 1913

*The "Standard" for Convenience, Economy, Efficiency*

Quickly and easily mixed. No working up—no sediment. No lumps. No waste. Never clogs spray nozzle. Highest per cent. of actual killing power. Absolutely safe, will not burn. Sold in net weight packages: 200 lbs., 100 lbs., 50 lbs., 25 lbs., 5 lbs., 1 lb. No shrinkage, seepage, evaporation. Every package contains actual net weight of "Corona Dry" paid for. Remember, "Corona Dry" means no guesswork, but a standardized spray in which the mixture is always the same strength and efficiency

Write for Booklet. Ask for Corona "Tree Insurance" Policy. Address

## CORONA CHEMICAL CO., Dept. E, Milwaukee, Wisconsin

MANUFACTURERS OF

*Insecticides and Fungicides, Arsenate of Lead, Lime and Sulphur, Bordeaux Mixture, Paris Green, Etc.*

Distributing Agents } Boston, Mass.—Joseph Breck & Sons Corporation  
Philadelphia, Pa.—Pittsburg Plate Glass Co.

Memphis, Tenn.—Hessig-Ellis Drug Co.  
New Orleans, La.—Finlay-Dicks & Co.

Spokane, Wash.—Spokane Seed Co.  
Portland, Ore.—Portland Seed Co.

**Northwestern Sales Agents** **Portland Seed Co., Portland, Oregon** **Catalogues and prices on request**

# Government Aid for Fruit Growers and Selling Agents

[NOTE.—The editor had the pleasure of listening to a very instructive talk on this subject delivered to an audience of fruit growers in Hood River, who were very much interested. The editor has written up this address entirely from memory, endeavoring to the best of his ability to embrace in a short article, briefly, the important features of the address. Therefore the reader will please bear in mind that this article was not written by Mr. Moomaw, but was written from memory by the editor of "Better Fruit," who desires to express his apologies to Mr. Moomaw for any oversights or errors and also desires to apologize for his lack of ability to express Mr. Moomaw's opinions and explanations in the intelligent way and forceful language of Mr. Moomaw.]

THE uniform contract for all growers to sign with the selling concerns embraces principles which the government officials believe will be vital and powerful factors in assisting fruitgrowers of Oregon, Washington, Idaho and Montana in the future, to obtain better net results for their products. The uniform contract permits the grower to fix the price at which his fruit or product may be sold, but does not place the responsibility for loss on the selling concern for failure to secure this price.

"It shall be the duty of the agent to co-operate with all resident selling agents who are members of the Fruit Growers' Agencies, Incorporated, for the following purposes: To secure in-

formation as to crop conditions in order to determine the economic values of varieties and grades of fruits and other products." Such information is absolutely necessary for the purpose of establishing market values or selling prices. It is equally bad to start prices too high or too low; in fact, it is worse to start too high than to start too low because by so doing the demand and consumption are arrested at the beginning of the season, and consequently the consuming habit is stifled in its infancy. Prices should be such as to stimulate immediate consumption at the commencement of the season and should continue at no time so high as to prevent sales. The California Fruit Exchange spends over \$100,000 annually to secure just such information.

If the growers want "the big stick" they have it right in the contract and can use it to protect themselves without injuring the business of any fair selling agency or anyone else. The aim of this contract is to create a condition under which selling agencies can and will work in close harmony with growers with the aim of securing uniform methods in harvesting, growing, packing and the physical handling of fruit from the tree to the car, and to

secure a standardization and enforcement of the grading and inspection of fruits and products in the States of Oregon, Washington, Idaho and Montana.

Growers generally attribute low returns to the selling agencies entirely. It is a fact that during the past season and in previous years apple growers of the Northwest have allowed their apples to hang too long on the trees in order to get the fullest amount of color and for various other reasons, unnecessary and unexplainable, have allowed them to lie in the packing houses for weeks before being packed. Consequently apple shipments have arrived on the market in overripe condition, necessitating immediate sales at prices under the actual values for fruit in prime condition for fruit which has averaged around 25 cents less per box, and frequently more than could have been realized had the apples arrived in firm, keeping condition.

Fruitgrowers have continually and persistently allowed the apples to become too ripe before packing to be in fit condition to go on cold storage. Refrigerator cars will not prolong the keeping quality of apples in overripe condition. Consequently the only



# THE HURST STEAM FRUIT EVAPORATOR

## A Few Reasons

### Why it is adapted to *Your* needs

- 1 The Hurst Evaporator is built in units of  $\frac{1}{2}$  ton capacity of green fruit in 24 hours. You can add one or more units any time without stopping the operation of the first unit.
- 2 Each unit is controlled by a separate automatic temperature regulator with a range of 30 degrees from 150 to 180. Experience has taught us that this range brings the best results in evaporating.
- 3 Any style boiler may be used having a pressure of from 50 to 100 pounds.
- 4 The Hurst Evaporator is shipped **knocked-down**—saving you freight. It can be set up very easily from the plans we furnish with each shipment.
- 5 The Hurst Evaporator is built like a cabinet—screws only are used. Each unit requires floor space of 34" by 100". It stands 86" high.
- 6 Glass doors on both ends permit you to see the condition of the fruit at any time.
- 7 Italian Prunes can be evaporated in 14 hours—Apples in 2 hours—Loganberries in 12 hours.
- 8 Made in one size **only**.
- 9 Made on order only.
- 10 Each evaporator is thoroughly tested before shipment is made.

Write for prices and illustrated catalogue.

**B. M. HURST**

207 Clay Street

PORTLAND, OREGON

# MOVED!

We are now located at our new plant.  
Address us here if you are needing

*Lime Sulphur  
Bordeaux  
Lead Arsenate*

**Oregon Arsenical Spray Co.**

Formerly at Clackamas

HOOD RIVER, OREGON

course open to the selling concerns was to save refrigeration expense by shipping under ventilation and take market values for fruit in overripe condition on arrival in glutted markets. If this same fruit had arrived in prime condition under refrigeration, fit for cold storage, frequently 25 cents and sometimes more per box could have been obtained. It is possible and reasonable to assume that 10 per cent or more annually can be saved by better preparation of apples for market.

Fruit prices have been so near the level of production cost that economy in every department has become a necessity. False economy, however, is a losing business. To allow fruit to become too ripe by endeavoring to save paying out money for necessary help to pick and pack promptly, depending on your family to do the work instead of hiring sufficient help, is a losing proposition—a statement which must be admitted by all intelligent fruitgrowers.

Community packing houses are now recognized as essential for proper handling of fruits. It will cost you no more, and generally less, to pack through a community packing house than in your own packing house. If your son works on the home place, he saves you paying out \$2.00 per day; if he works in the community packing house and earns \$2.00 per day, you are even. The proposition is as broad as it long. The fruitgrower does not save any more money in having his own boy pack his fruit than he would save if he had his fruit packed by a community packing house that employs his son.

Pick your fruit quickly and rapidly when ready, and pack today or tomorrow. By so doing you will extend the life of an apple at least a month or more. Selling concerns must co-operate and work with growers to insure picking at the right time, prompt packing and immediate delivery to the cold storage plant. By so doing, an immense annual loss that has occurred in the past will be prevented in the future.

Northwest growers think they do everything in the orchard business better and more up to date than anywhere else in the world. The Mooma family have owned large orchards in Virginia since 1869, which have now been handled by members of the second generation for 29 years and, frankly, from experience, the following statement is justified. Some of your methods in the Northwest would not be tolerated in Virginia by any of the growers. Every grower in Virginia picks "today" and either packs "today" or "tomorrow."

Spitzenbergs, Winesaps, Newtowns, Rome Beauties and your other winter varieties are usually picked in October, and it is a fact that a large proportion of your growers allow these varieties to remain in the packing house for weeks before being packed out. Frequently some of them do not get these varieties packed out until way along in



December. It is not an uncommon thing to see a grower hauling a load of Spitzenbergs to the warehouse in December which were picked in October.

The Spitzenbergs and Newtowns are highly specialized in the Northwest, and particularly in Hood River. It is true these two varieties can be grown successfully in only a few localities and these are limited, but this does not justify growers in assuming that they can go on the market with these or any other varieties without due consideration for the quantity of apples and varieties which are grown in other districts. The Northwest apple growers are not so independent as they imagine. There are many problems that are common to all districts. Growers must realize this and admit it and be willing to co-operate with other districts on all problems that are common problems. Bad conditions in other districts are most serious problems with which Northwestern fruit-growers will continually have to contend. Poor or low-grade fruit and inferior varieties are the worst kind of competition. Some districts pack poor stuff, diseased and wormy. This should be stopped. Generally it sells for less than the cost of production and freight, and when it sells it prevents the sale of all good grades and good varieties at prices which would pay a living profit.

The packing and sale of poor stuff should be stopped by adopting uniform grading rules with legal enforcement. The importance and value of uniform grading, legal enforcement and inspection, has been demonstrated satisfactorily to the most doubtful as a necessary business method by the Wenatchee district, which originated and carried into practical operation in 1915 the best plan for uniform grading, legal enforcement and inspection that has ever been created or operated anywhere among fruitgrowers in the United States.

An official inspection certificate is one of the best selling cards in the world. Just one illustration, for example, will be very convincing. A Philadelphia house bought two cars of Wenatchee apples which arrived without inspection certificates, rejecting them on arrival. Inspection certificates were telegraphed for and on arrival the dealer, although the market was more depressed and values lower, on presentation of certificates, accepted the cars and paid the original purchase price.

Uniform standards, uniform systems of legal enforcement, community packing houses, quicker handling and cold storage facilities, are all vital problems necessary for the better success in the future.

Cold storage can only retard decay; it cannot prevent it. It is absolutely necessary, to secure the maximum life of an apple in cold storage, to have it go on cold storage in prime, sound condition.

## Scale—Scab—Mildew

These are the principal pests and diseases affecting the apple orchard

### LILLY'S Soluble Sulphur

Is the best spray for scale, mildew and scab. It has a proved record of five years. Effective, Economical, Convenient.

Note results obtained by—

Washington Station, using 20 lbs. to 100 gallons:  
Yakima Valley in 1913—99% scale killed.  
Yakima Valley in 1914—98% scale killed.  
Wenatchee Valley in 1915—98% scale killed.

Note results obtained by—

District Inspector at North Yakima in 1914 with 20 lbs. to 100 gallons, 99% scale killed.  
Again three tests at different strength in 1915:  
15 lbs. to 100 gallons—75% scale killed.  
20 lbs. to 100 gallons—96% scale killed.  
25 lbs. to 100 gallons—98% scale killed.

This is an indisputable scientific record.

100-lb. drum.....	\$7.50
10-lb. can.....	1.25
1-lb. can.....	.20

LILLY'S—Seattle and Portland



If You Want to Know How to Control SCALE, MILDEW and SCAB Send for our 1916 SPRAY BULLETIN It tells about the Best Spray and how Best to Spray

## TRADE "WOOD-LARK" MARK GOPHER & SQUIRREL POISON

QUICK, CERTAIN, DEADLY. ALWAYS READY, NEVER FAILS

**Destroys Squirrels, Gophers, Diggers, Prairie Dogs, Sage Rats.**  
**Save your orchards and young trees.**

Apply early in spring when the hungry pests awake from winter's sleep. Money back if it ever fails. "Wood-Lark" for 26 years has stood every test. It's fruit and tree insurance against rodent pests.



Manufactured by **CLARKE-WOODWARD DRUG CO., Portland, Ore.**

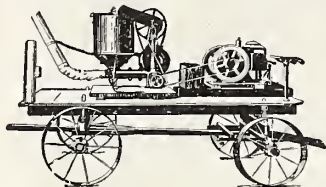
In the past, selling concerns have had to hustle all season for tonnage to maintain their existence, not only in advance of the market season, but at its commencement and during the entire selling period. This was a condition for which selling agencies were not entirely to blame. Fruitgrowers

thought themselves wise enough and smart enough by holding out from signing to be able to obtain later the best marketing price. They held out with the hope that some cash buyer would come along and offer a satisfactory price, or they held out until some commission man came along



## Dust Spray

Saves 60% of Spraying Cost



Ideal Power Dusting Outfit.  
Endorsed and used by  
Cornell University.

For Catalog and Full Information  
write

**DUST SPRAYER MFG. CO.**

1415 St. Louis St., Kansas City, Mo.

guaranteeing an advance, with good promises of splendid prices. If these did not materialize, then they signed up with a selling concern, crowding a big tonnage onto the selling concern late in the season, which was unexpected and for which no preparation had been made for efficient selling. Selling concerns must be protected against such practices if they are expected to get the best results. They must know in advance what volume of fruit they will control for market, and be prepared in advance and have time to look up markets and make the necessary connections for disposing of their product to the best possible advantage. They must not be hampered by being compelled to devote their time to securing signatures to contracts in order to acquire the necessary tonnage to pay running expenses. It is essential that economy must be observed in tonnage campaigns; growers are getting tired of paying money out of their pockets for high-priced men to solicit their tonnage; they are getting tired of buying automobiles for this purpose and paying for the gasoline which is burned up in this way.

Preparation for selling should begin in July and continue throughout August and September, and be thorough in securing a knowledge of the best opportunities and the best methods of disposing of the coming crop. All this knowledge should be available and secured in advance of the selling season.

Growers have been to blame for many disastrous conditions in the past. It has been common in many districts for growers to hold out for cash buyers; when they did not materialize at the last moment, to sign up with some selling concern and swamp it with an unexpected tonnage late in the season.

This contract will cut out this evil by requiring all growers to sign up by July first. This date will protect growers against their own follies and cut out the extra and continued expensive tonnage campaign of solicitation which the growers have paid for in the past.

The minimum number of cars required for membership as a selling concern in this agency will be 100. As a matter of fact it is more or less the opinion of the government officials that a tonnage of 500 cars is actually necessary in order to enable a selling concern to provide itself with an efficient system for handling and selling to the best advantage. However, it was decided to make the limit necessary for membership a minimum of 100 cars. The trustees will be composed of five men connected with the selling agencies, five representative fruitgrowers and one trustee to be selected by these ten.

Active membership will be \$100 per year, giving full voting power. Passive memberships will be \$5.00 per year, with all privileges except voting and office holding.

A uniform system of accounting, showing the prices for the varieties, grades and sizes, will be adopted so

## Spraying Suggestions

In the control of orchard pests during the growing season it is important that all spray materials used be properly balanced chemically, manufactured for a definite purpose and of the best quality obtainable in order to give effective control of insects and diseases without injury to the trees, foliage or fruit.

**ATOMIC SULPHUR PASTE**, a non-caustic fungicide, is safe to use and gives effective and lasting results without injury to trees, foliage or fruit when properly applied. It can be safely combined with Orchard Brand Arsenate of Lead when spraying for codling moth control and it is important that it be first added at the time of the calyx spray in order to start the stimulation which results in increased vigor to the tree, the setting of more uniform crop of fruit and a proper control of mildew, which disease is becoming more general throughout the Northwest each year. When thoroughly applied after blooming time at proper intervals it is also effective in preventing any further growth of scab fungus and will control red spiders and mites on fruit trees. Atomic Sulphur is the best material known to control brown rot and scab on prunes, peaches, plums and similar stone fruits and for the control of mildew on all classes of fruit trees, grape vines and ornamental plants.

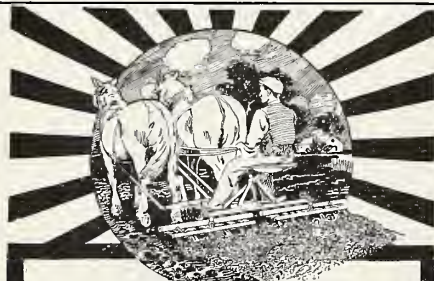
**ORCHARD BRAND ARSENATE OF LEAD PASTE** is now easy to handle and mix with water because it is so manufactured as to prevent settling in a hard mass to the bottom of containers, and is a soft, fluffy paste which, after diluting in water, maintains the best possible suspension which insures an even coating of poison, closely adhering to the surface of fruit and foliage, giving lasting and effective results. Chemical ingredients guaranteed. Those growers desiring the dry form of lead will find the Orchard Brand lead powder convenient to use and effective.

Complete stocks of both Atomic Sulphur and Arsenate of Lead, together with other necessary Orchard Brand Spray materials carried in the Northwest with the following distributors:

GILBERT & DEWITT,  
Hood River, Oregon.  
BALFOUR, GUTHRIE & CO.,  
Portland, Oregon.  
ROGUE RIVER CO-OPERATIVE FRUIT  
GROWERS' ASSOCIATION,  
Medford, Oregon.  
MORGAN, McKAIG COMPANY,  
North Yakima, Washington.  
WELLS & WADE,  
Wenatchee, Washington.  
McGOWAN BROTHERS HARDWARE  
COMPANY,  
Spokane, Washington.  
SAMUEL LONEY & COMPANY,  
Walla Walla, Washington.  
C. J. SINSEL,  
Boise, Idaho.

Fruit Growers will do well to write us giving full description of pests and troubles on their orchards, and we will reply by personal letter as fully as possible.

**General Chemical Company**  
San Francisco, California  
Manufacturers of



## "Fine Work!"

—that's what you'll say when you see the soil, manure and stubble mixed over and over with the

### "Acme" Pulverizing Harrow

"The coulters do the work." They cut and crush clods, turn the soil twice, pulverize and mulch at one operation. There's an "Acme" for every purpose—sizes 3 to 17 1/2 feet in width. Send for free book—now—and learn more about these most dependable of all seeded builders.

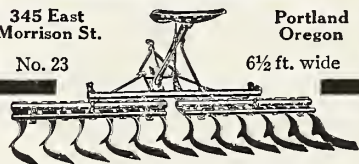
**Duane H. Nash Inc.**

345 East  
Morrison St.

Portland  
Oregon

No. 23

6 1/2 ft. wide



## LABELS—CARTONS

**Schmidt Lithograph Co.**  
SAN FRANCISCO

LOS ANGELES, FRESNO, PORTLAND, SEATTLE  
SALT LAKE CITY, HONOLULU

## Wenatchee Fruit and Vegetable Picking Bags

(Patented April 27, 1915)

The mouth of this bag is a novel shape, admitting the putting of the fruit or vegetables in the bag, using both hands at the same time, and bag is emptied by releasing a snap. The bag will hold about a bushel. When snapped at the frame it will hold about a half bushel. The frame is made of steel, the canvas is 10-oz. and every point is reinforced with leather where from experience it has been found necessary. This bag is acknowledged by the growers of the Wenatchee, Yakima and Hood River Valleys to be the best bag now on the market. **Price \$1.75 post paid** to all parts of the United States where we have no agents.

**Wenatchee Hardware Company**  
Sole Manufacturers Wenatchee, Wash.



any grower can make intelligent and correct comparisons.

An annual audit by a certified accountant of account sales will be required each year of every concern, one month in advance of the closing date for signing of contracts.

Frequent meetings of the officers of the various selling concerns, active and passive members, will enable the selling concerns to acquire a better knowledge of values and serve to maintain and stabilize prices. These conferences and exchanges of opinions will be forceful factors in preventing unnecessary price cutting or selling at ridiculously low prices.

**Uniform Contract for the Growers and Selling Agents of Fruits and Produce in the Pacific Northwest.**

In consideration of the mutual advantages to be derived herefrom, it is agreed between the parties to this contract as follows:

I. The grower shall have the exclusive right and authority to fix the price at which his products or any part thereof may be sold by the selling agent, but in event the price so fixed shall be higher than the best market price obtainable after offering the same, the selling agent shall in no wise be held responsible for failure to negotiate sales at such prices.

II. It shall be the duty of the agent to co-operate with all growers' resident selling agents who are members of the Fruit Growers' Agency, Incorporated, for the following purposes:

(a) To secure information as to crop conditions in order to determine the economic values of varieties and grades.

(b) To work in close harmony with growers with the aim of securing uniform methods in the harvesting, grading, packing and the physical handling of the fruit from tree to car; and to secure a standardization and enforcement of the grading and inspection rules of the States of Oregon, Washington, Idaho and Montana.

(c) To agree upon a date after which no contracts for tonnage shall be entered into.

(d) To discuss in conference market conditions and experiences with various mediums used in the markets for the purpose of ascertaining the most efficient agencies and market outlets for the economical performance of their mutual contract.

(e) To secure improvement in transportation and storage service and conditions.

(f) To work out definite plans for the development of various domestic and Canadian markets, utilizing experienced men and the combined resources of the said agents.

(g) To develop foreign markets along the following lines:

(1) To conduct comprehensive foreign investigations for the purpose of knowing trade demands and making reliable trade connections.

(2) To see that the fruit is prepared for market so that the grade and pack may be in accordance with the best trade demands.

(3) To supervise the physical handling of the shipments through to final destination and to secure adequate insurance so that the hazards may be reduced.

(4) To secure capable foreign agents to conduct sales abroad.

(5) To expand old markets and develop new ones by direct contact and through the solicitation of special agents.

(6) To devise ways and means to safeguard and secure prompt collections.

(7) To secure adequate transportation facilities by underwriting steamship charters and promoting new fruit trade routes.

(h) To pool proceeds of sales and share, pro rata, any loss sustained in the development of new markets according to the varieties and grades over definite periods, so that profits and losses therefrom may be equalized.

(i) To secure the standardization of agents' accounting records, to the extent that all account sales issued by the said shipping agencies will be figured on the same basis and in such manner that they will be uniform, allowing true comparisons to be made by the grower between the services rendered and prices secured by the different agencies.

(j) To secure an annual audit of the sales records of the current season's business of said agents by firms of certified public ac-

# Millions of Worms

LAST SEASON

# A Fight on Your Hands

THIS SEASON

# Select Your Ammunition

WITH EXTREME CARE

HOLD TO WHAT YOU KNOW IS GOOD

# The Grasselli Brand

ALWAYS UNIFORM—ALWAYS DEPENDABLE—NEVER FAILS

THE STANDARD

**Grasselli Arsenate of Lead Paste**  
**Grasselli Arsenate of Lead Powder**  
**Grasselli Sulphate of Nicotine 40%**

**The Grasselli Chemical Co.**  
Established 1839 CLEVELAND, OHIO  
BRANCHES  
New York, St. Paul, Cincinnati, Chicago, St. Louis  
Detroit, New Orleans, Boston, Philadelphia



countants of recognized standing, the reports of these audits to be available to the growers not later than one month prior to the closing of the contract period for the next season.  
(k) To make all possible legal and banking arrangements for the financing of the growers.  
(l) Advancements shall in no case be made in such manner as to pass title of the fruit.

**Editor Better Fruit:**

I have read with considerable interest your two articles in the March number descriptive of the different forms of plant lice and methods of treatment, one by Paul R. Jones, entomologist, and one by Dr. A. L. Melander, entomologist. Mr. Jones has attained good results and recommends "Black Leaf 40" to combat these troubles, while Professor Melander says the best material found to control aphids is nicotine sulphate. No doubt, in the minds of many who have read these articles, there is now a conflict or confusion, and the instructive value of the articles is lost, in a measure, because of the fact that there are at least some who do not know that "Black Leaf 40" and sulphate of nicotine are one and the

same thing. For the sake of correctness and better understanding by all, would it not be better to refer to these spray materials by their true name, when they have one, rather than using the coined brand name of any manufacturer? A Subscriber.

A new spray is being introduced for maggots, grubs and worms, which infest the vegetable gardens, and is being put on the market under the name of "Carco Brand" by the Standard Chemical Co. of Tacoma, Washington.

**Orchard Heating.**—Fruitgrowers who are troubled with frosts which usually occur in April or May in the Northwestern territories, should make up their minds if they are going to do any orchard heating this year. If so, they should buy their supplies early.

The brood sow should be fed well. The following directions for a good ration are given by the Missouri Experiment Station: Corn, 50 parts by weight; shorts, 25 parts; alfalfa hay or bran, 15 parts; linseed oil meal, 10 parts.



# BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association  
A Monthly Illustrated Magazine Published in the  
Interest of Modern Fruit Growing and Marketing  
All Communications Should Be Addressed and Remittances  
Made Payable to

## Better Fruit Publishing Company

E. H. SHEPHERD, Editor and Publisher

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In the United States, \$1.00 per year in advance  
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Entered as second-class matter December 27, 1906, at the  
Postoffice at Hood River, Oregon, under Act  
of Congress of March 3, 1879.

What is the matter with us fruit-growers of the Northwest? In the Sacramento Valley, California, the bulk of deciduous fruit is handled by the California Fruit Distributors in a very successful way under the able management of Mr. Virden. Good prices have been obtained year after year on the average, paying the grower a good profit on the investment. The California Fruit Distributors is an incorporated concern. In Southern California the bulk of the tonnage in oranges, lemons and grapefruit is handled by the California Fruit Growers' Exchange, under the very able management of G. Harold Powell. The California Fruit Growers' Exchange has met with phenomenal success. A few years ago when the orange industry of Southern California amounted to 1400 cars per year, it was universally conceded that the industry was overdone. The California Fruit Growers' Exchange has developed and created a demand and sale for a steadily and rapidly increasing volume, totaling annually over 50,000 cars, obtaining good prices, prices that pay the grower a satisfactory profit on the investment. The California Fruit Growers' Exchange is a model co-operative institution. The raisin growers of California organized an association which has pulled this industry out of the slough of despondency. The walnut growers of California have probably the most thorough organization of any, controlling practically the entire output of that state, and are so strong that they practically dominate prices at which walnuts are sold.

Now, about the Northwest for comparison. Up and down, now and then, here and there, has been the situation for years. A few years ago the fruit-growers became dissatisfied with marketing through individuals, shipping on consignment or selling f.o.b. to cash

buyers, and started a crusade for associations. The result was in a few years over one hundred fruitgrowers' associations were formed in the Northwest. Every district had its organization and many of them were exceedingly good ones. At first they were all supported and met with excellent success, then the kicking began and members withdrew. The Northwestern Fruit Exchange was created a few years ago, with modern conveniences, systematic business methods, splendid equipment, large connections, under the management of able men. Then the North Pacific Fruit Distributors was created, a mutual co-operative organization, organized by able fruitgrowers, representing every district of the Northwest, a child of their own creation, after their own ideas, owned and controlled by themselves. But it failed to get the fruitgrowers' support and at no time did they control tonnage in excess of about 50 per cent. The fruitgrowers did not support what they had created and again were not satisfied. In 1915, the growers, after a year of dissatisfaction in 1914, organized the Fruit Growers' Council and Board of Control. Representatives and chosen delegates to the number of about 300 from every section of Oregon, Washington, Idaho and Montana met together in two meetings, which lasted several days and several nights. Everybody got what they wanted; everything was done the way the fruit growers wanted it done; they created an institution after their own ideas and were the bosses. You know the result. The Northwestern Fruit Growers' Council was never supported by the growers, and the very growers who had formed it refused to put up the small sum of one-quarter of a cent per box to finance it.

Last year the government, on the urgent request of the fruit industry of the Northwest, business men and bankers, sent government officials to the Northwest to study the fruit industry. They paid their own expenses, they asked no pay, they wanted only information. Did they get it? In 1915 there were 9400 cars of apples shipped. All the government asked was that every shipper should report the destination of the cars shipped. Less than one-half, or about 4500 cars, reported destination of tonnage. One-half of the fruitgrowers helped the government by giving information they asked for, the other half not only did not, but blocked the wheels of progress. The fruit situation in the Northwest looks similar to the condition existing in the United States at the time of the Civil War—about one-half of the United States supported the United States government, the other half did not. The United States came near going busted. They fought it out to a finish and finally all agreed in peace to support the United States government, and today the United States is the most wonderful country in the world. So it may be with us fruitgrowers of the Northwest. We may go busted. Half of us want to support organization,

government control, and orderly, intelligent marketing of the crop—the other half have never supported such a movement. Will we go busted, or can we agree on peace terms and universally support organization, government, control and orderly distribution? Government officials who have given the matter study for nearly two years, who have no axe to grind and get no pay for what they are doing, who have no other interests than to help us, state that the fruit industry of the Northwest can only be put on a proper paying basis through organization and orderly control.

**The Newtown Pippin.**—The Newtown Pippin is rated by the American Pomological Society at nine to ten. This rating is only exceeded by one other apple for quality, viz., the Spitzenburg, which is given a rating of ten. The Newtown Pippin originated on Long Island, New York, from where trees were obtained and the apple quite extensively planted in Virginia and along the Hudson River. Later this apple was introduced on the Pacific Coast. The number of districts where the Newtown can be grown successfully and is grown in a commercial way are comparatively few,—fewer than any other variety of apple and more limited in area. The producing districts growing a quantity of the Newtown Pippin are the Hudson River; Virginia; Pajaro Valley, California; Rogue River Valley and Hood River Valley, Oregon; Yakima and Walla Walla Valleys, Washington. While the Newtown Pippin is produced in a small way in a few other sections on the Pacific Coast it is not grown anywhere extensively except in the districts above named. The Newtown Pippin keeps in excellent condition until about April; in cold storage it keeps in excellent condition until July and August. It does not mature sufficiently to be a good eating apple until in December, but from that time on it is not surpassed for flavor, juiciness or quality by any other variety. If you will read the little article reproduced in this issue as to the origin of the Newtown Pippin it will give you a splendid idea of the popularity of this apple in Europe, more particularly in England, Scotland and Germany, where the imports exceed any other variety of apple grown on the Pacific Coast. The popularity of this apple abroad, where people have to pay a great deal more for it on account of freight, than they do for home-grown apples, should be sufficient evidence to convince any thinking individual there is every reason to assume the Newtown Pippin should be just as popular throughout the United States in the late winter months as abroad. The fact of the matter is the Newtown Pippin never has been properly distributed, or even introduced or an attempt made to introduce it of any importance in any of the consuming centers of the United States outside of the City of New York. This is excusable for the reason that in previous



years the demand for this apple abroad was so large that the growers did not have to look for home markets, as the foreign markets readily took practically all of the entire crop. A Hood River man, two or three years ago, attended the Western Fruit Jobbers' Association in Denver, composed of over 500 fruit dealers, covering the entire Middle West and Pacific Coast. At this convention he made a display of Newtown Pippins, Spitzenbergs and Ortleys. A few of the dealers recognized the Spitzenbergs, the ones who had lived in New York, where this variety is grown to some extent, but hardly a dealer knew the name of the Newtown or recognized the variety when he saw it. There was not a single individual who was familiar with the Ortley. There seems to be a popular impression that the United States wants red apples, and red apples only. While it must be admitted there is always a demand for red apples if the variety is good, but that is not sufficient reason why the public will not buy yellow varieties of apples if they are of good quality. That yellow varieties are popular where introduced must be admitted from the fact that there is an immense sale for Grimes Golden and Belleflower. In this connection it seems pertinent to call attention to the fact that Colorado is a large producer of red apples, particularly the Winesap and Jonathan, yet the City of Denver bought more Belleflowers from California than any other city of the United States outside of California. Through the advertising campaign conducted in Los Angeles and Portland in 1914 by the Hood River Apple Growers' Association the Newtown Pippin was introduced, meeting with popular favor and a ready sale, where previously no demand had existed. Therefore, in conclusion, there is good reason to believe if the right kind of effort is made in conjunction with the right kind of a publicity campaign, backed up with a strong selling force, that the Newtown Pippin can be made as popular in this country as in Europe, selling for prices that would pay the growers equally well if not better than the prices obtained when exported.

Preparedness can only be accomplished through organization. Germany has demonstrated this beyond all argument. You know the result. Do you as a fruitgrower need any further convincing to impress you with the necessity of being prepared for marketing the coming crop. If the fruitgrowers don't know that this preparation can only be done through organization then they had better carry on a little investigation.

Growers in districts that are fortunate to have a good lime and sulphur factory should patronize that factory when they want lime and sulphur. Save the freight on water. You should help home industries and help build up your community by encouraging home pay rolls, which keep money at home.

## PROOF OF OUR LEADERSHIP

Elsewhere in this paper you will find factory advertisements of nationally known lines of orchard and farm implements—handled in the Northwest by us and our agents.

### Myers Spray Pumps and Power Sprayers

A line we have handled for years. We carry the Largest Stock of Spray Pumps and Fittings on the Coast.

### Light Draft Harrows

We assisted in the development of this wonderful harrow. Nothing Like It for Orchard Cultivation.

### Cutaway Harrow

We do not handle imitations. When you want a Double or Single Action Cutaway buy the Original Clark Harrow and you make a safe investment.

#### BIRDS OF A FEATHER FLOCK TOGETHER

Our entire line is built upon a quality basis. Get our prices on anything you need in Farm Implements and Supplies.

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LEWIS & STAYER CO

Portland, Ore.  
and  
Spokane, Wn.

The government officials who have carried on market investigations during the past season say that no selling organization with less than 100 cars per year will be eligible to membership in the selling agencies incorporated for the reason that no selling concern with an income on less than 100 cars has sufficient funds to secure able salesmen, necessary market information and render efficient service. Although they have placed the membership in the agency incorporated at 100 cars, it is really their opinion that concerns should have a tonnage of 500 cars to render the most efficient service and best results.

**Don't get scared before you are hurt.** Don't count your chickens before they are hatched. Don't put out big estimates at the blossom time. You had better wait until the crop is set and then be sure before you "get too free" with your big estimates. Nothing demoralizes the fruit market more than early exaggerated estimates. The damage that is done can never be overcome.

**Are you going to help yourself by adopting government methods,** following the advice given by government officials, and sign up with some marketing concern affiliated with the selling agencies incorporated before July 1st, or will you buck the government and its service by staying out, again inviting 1912 and 1914 prices, and repetition of previous disasters?

**Wenatchee deserves great credit for creating the only plan of uniform grading, inspection and legal enforcement ever attempted by the fruitgrowers.** Be it further to their credit that Wenatchee put this plan into successful practical operation in the year 1915.

The vinegar factory, the evaporator and the cannery are the fruitgrowers' best friends. They are faithful; they never desert you, but stay with you year after year. Don't forget they will pay you more money for low-grade fruit any year than you will get for fresh fruit sold on glutted markets, that is not in prime condition for long-distance shipment.

The government officials, C. E. Bassett, W. H. Kerr and C. W. Moomaw, after a very careful investigation of the Northwestern fruit industry, covering a period of one year, state publicly that success and profit for the fruitgrower depend on shipping through organized selling agencies or associations.

**Uniform grading rules, inspection and legal enforcement is the only plan** that will give your packed fruit in the warehouse or cold storage or rolling an established market value or make it a security that has bankable value.

**Every little city and every fruit district** has from one dozen to fifty fraternal organizations. This indicates that the fruitgrower is a great joiner. He joins everything that comes along except the Association.

**Uniform grading and inspection with legal enforcement is the only method** that will absolutely standardize our fruit. Without standardization there can be no established trade and demand.

**The worst competition is self-competition** existing within each district.

**It is better to start selling prices on fruit too low than too high.**



# Live Stock and the Orchard—Care for What We Have

I. D. Graham, Editor Rural Spirit, Portland, Before Oregon State Horticultural Society Meeting at Corvallis

EVERY human being is interested in some form of animal life, and the natural and more immediate interest of civilized man centers in the domestic animals. Moreover, the welfare of the human race has always and everywhere been largely dependent upon our animal friends and neighbors. The wild man of the forest and plain is no more dependent for his welfare upon the animal life within his reach than is the up-to-date horticulturist, who represents the highest type of civilization. It is because of the lack of a full realization of this fact and of its importance that serious mistakes have been made in our work of developing our country, and of preserving its rich heritage for future generations as well as for our own declining years. That's what's the matter with Oregon today.

Ever since it has been my privilege to reside in Oregon I have been hearing, on all hands, that the great and immediate need of this state is more people—a large population to aid in the development of our boundless resources. If this state only had more people all would be well and prosperity would take up her permanent abode in the territory lying between California and Washington. This is all wrong. What Oregon needs is to take care of the people she already has. When these become unduly prosperous plenty of others will come and they will not need to be urged. The first

thing to do, the first step toward a larger population, is to get rid of our present reputation. Sounds strange, doesn't it. But that is exactly what I mean. All over this broad land and wherever the State of Oregon is known her reputation rests almost entirely upon only two of the creative industries—fish and fruit—and we must get away from this.

Now don't misunderstand me. Don't get away from the fishing and don't get away from the fruit, but do get away from the reputation that these are the only things that Oregon can or does produce. Get away from the reputation that this is a one-crop state, but don't harm a single tree or bush or vine. No one is more proud of the fact that Oregon is one of the greatest fruit-producing states in the world than I am. No one is more proud of the quality of the fruit we produce, and there is nothing better that grows, but I do feel chagrin that the world does not know that we produce other things as well. Such a reputation is harmful rather than beneficial and settlers are not tempted to a state with a one-crop reputation only. We must get away from it and this can be done only by working together. First, we must co-operate with associations and individuals. Co-operation and not competition is the real foundation of modern success. The great business interests of today, the widespread of our public utilities, even the inroads which

we make against vice and ignorance are the results of community efforts. Real and permanent success can come only by working together—each doing his part for the general good and each understanding the viewpoint and needs of the other fellow. Second, raise more fruit, with live stock. In the production of fruit this state has not even approached the possibilities. Living as we do upon the rim of the world, where the wilderness has made its last stand and where we occupy the last land, with our population increasing by leaps and bounds, there is no more promising field of industry, no greater inducement for a successful career and no safer or more remunerative vocation in any field of human endeavor than can be found upon the American farm. More fruit can be raised by planting more ground, of course, but the land is all taken and many of us do not have the help or the equipment with which to handle more land, if we had it. There remains but one thing—get more out of the land we have, and this can be done in only one way. Make of live stock an important factor in all orchard and farming operations.

Rotation of crops, green manures and artificial fertilizers are all helps to immediate results, but they are but temporary makeshifts at best. The alternating of a deep-rooted crop with one of shallow growth serves to increase present yields, but will ultimately exhaust both layers of soil. The plowing under of green manures is an excellent practice, but serves barely to prevent a marked decrease in soil fertility, while the use of most chemical fertilizers produces a temporary stimulation and not a real fertilization of the soil, and is at best but an expensive substitute for barnyard manure.

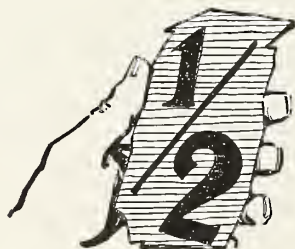
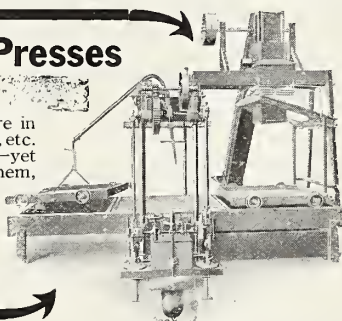
In addition to maintaining the fertility of the soil in nature's own way, which is most important, live stock is a money-maker of no mean quality on its own account, and it has this pre-eminent advantage: It enables you to make money all the year round and not during the crop season only. Without live stock your plant must lie idle many months of the year; with it you work the plant on full time. Live stock furnishes a pleasant employment. I think most men, and I am sure most boys, enjoy working with animals, and I am equally positive that if there is any solution to the question of why the boy leaves the farm it is most often answered favorably by live stock—when the boy owns it. The products of live stock are always in demand and at more stable prices than any other farm product, and this demand will increase as population increases, while the beginner in orcharding—the man who is starting his orchard to growing and who has a cow, a hen and a sow, does not need to worry about something to eat while he waits for his

## "Mount Gilead" Hydraulic Cider Presses Are Not Experiments

FOR forty years they have assisted apple growers everywhere in wiping out the apple waste from windfalls, culls, undergrades, etc. These cost just as much to grow as the highest grade of apples—yet they are unmarketable. However, there is no need of losing them, because they may be made into **Good Marketable Cider**.

Our presses are made in any size up to 400 bbls. per day. We also make evaporators, apple butter cookers, vinegar generators, filters, etc. Write **today** for catalog.

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PACIFIC COAST REPRESENTATIVES  
**The Berger & Carter Co., 17th & Mississippi Sts., San Francisco, Cal.**



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**Standard Oil Company**  
(California)

# MICA AXLE GREASE



trees to grow. Live-stock manufactures the coarser and cruder farm products into highly valuable and readily salable commodities, and in doing this it utilizes much that would otherwise be waste.

There is a vast deal of waste on the American farm—so much that we are astonished when we really find it out. It is said that the average foreigner who is familiar with farming conditions in Europe is amazed at the vast waste of really valuable material which he finds on the American farm. This waste of the farm is a very real one and may prove to be the one factor which decides between profit and loss. If the farmer, by his present methods, is losing money or is barely holding his own, as too many of them are, then a change of method is necessary and this change does not need to be in the production of larger yields, but in the saving of waste and the stopping of leaks, in order to make money. If this waste can be saved and the leaks stopped in addition to the production of larger yields, then the problem is more nearly solved and the future has fewer apprehensions. Saving is just as important as earning.

The culled fruits from the orchard when supplemented with alfalfa, clover or peas, some of which may be grown in the orchard itself, makes a very palatable and satisfactory maintenance ration. I know of one man who was a consistent prize winner at the big live-stock shows this fall who raises and feeds his hogs on cull apples and alfalfa, supplemented with a small grain ration while fitting. This man only owns ten acres, and that is all in orchard. I know another man who accomplishes a like result with another breed of hogs on a three-acre orchard. These men are successful. They have good fruit and they win prizes with their hogs. They succeed with their fruit because they have the hogs, and they succeed with their hogs, in part at least, because they have a waste material on their farms which is utilized by their hogs. But it is in the keeping up of the fertility of the soil that live stock has its greatest value to either orchardist or farmer. There never can be any permanent system of agriculture without live stock. The depletion of our soils through constant cultivation without feeding them is the gravest danger to American agriculture, and when our agriculture fails our nation fails.

The cash value of barnyard manure is \$27.74 per year for each 1000 pounds weight of horse. That from cows is \$29.27 for each 1000 pounds of live animal. That from hogs is \$37.96; from calves \$24.45 and from sheep \$26.09 for each 1000 pounds of live weight. These figures represent the actual fertilizing value, but give no credit for the benefits in the mechanical condition of the soil which are derived from the use of barnyard manure. These figures also represent profits which the orchardist who does not keep live stock might have but does not get.



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the welfare of individual or business is seldom endangered where industry and sound financial guidance are in co-operation. This long-established, strong state bank desires to indicate its willingness to place its business friendship at the disposal of those who require, and can estimate, the service it is so well prepared to render.

## Ladd & Tilton Bank, Portland, Oregon

### Statement of the Ownership, Management, Circulation, Etc.

Required by the Act of Congress of August 24, 1912.

### of "Better Fruit," Published Monthly at Hood River, Oregon, for April, 1916.

State of Oregon, }  
County of Hood River, } ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared E. H. Shepard, who having been duly sworn according to law, deposes and says that he is the editor and business manager of "Better Fruit," and that the following is to the best of his knowledge and belief a true statement of the ownership, management (and if a daily paper the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:  
Publisher, Better Fruit Publishing Company. Postoffice address, Hood River, Oregon.  
Editor, E. H. Shepard. Postoffice address, Hood River, Oregon.  
Managing Editor, E. H. Shepard. Postoffice address, Hood River, Oregon.  
Business Manager, E. H. Shepard. Postoffice address, Hood River, Oregon.
2. That the owners are: (Give names and addresses of individual owners, or if a corporation, give its name and the names and addresses of stockholders owning or holding one per cent or more of the total amount of stock.)  
Better Fruit Publishing Company. E. H. Shepard, Hood River, Oregon.
3. That the known bondholders, mortgagees and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.
4. That the two paragraphs next above giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.
5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

(Signed) E. H. SHEPARD,  
Editor and Business Manager.

Sworn to and subscribed before me this 29th day of March, 1916.  
(Seal) ALTON W. ONTHANK.  
Notary Public for the State of Oregon.  
(My Commission expires May 29, 1919.)

These figures represent profit over and above that which may be made on the live stock itself, so that if the orchardist only "breaks even" on the live stock he is still ahead of the game.

The farm is a factory which, in order to be profitable, must be worked to its highest efficiency. This can never be attained through any single-crop system like fruit or grain growing. Nor through any system which is wasteful of materials or which allows the plant to lie idle for long periods. Nor yet through any system which requires a large amount of hired labor to meet emergencies like the harvest and then ceases its activities. Live stock corrects all these evils and is the only thing that will. Live stock keeps the farm working every month in the year;

it utilizes waste materials and manufactures them into the highest-priced farm products, for which there is always a demand. It restores and maintains the fertility of the soil without which other crops cannot be produced. It brings a steady income which is less subject to fluctuations in a period of years through weather and market conditions. It adds to the joy of life by affording animate things to work with and bring a profit while the other crops are growing, and it affords the only insurance of continuous success on the farm.

The snowfall in Hood River Valley during the winter of 1915-16 was 119 3/4 inches. That means plenty of moisture in the ground, which means a good crop this year.



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## Rosette and Cover Crops

By O. T. Clawson. Inspector at Large, Wenatchee, Washington

**R**OSETTE has caused a great loss to the orchardist of this as well as other districts of the Northwest, and a great deal of experimenting has been the result. Many of these experiments have given partial results or even perfect results under certain conditions. In some cases dynamiting has given good returns. The applying of nitrate of soda, manuring, liming, subsoiling, pruning and many other cures have been used with varying success, but the one cure which is given almost universal credence is the planting of a leguminous cover crop, preferably alfalfa. While arguing for alfalfa in the orchard early last year I made the statement that "I could take anyone to at least a hundred orchards in the main valley where alfalfa had been grown for three years or more and that if anyone could show me rosette in any one of the orchards, I should turn him my monthly check." More or less publicity was made of this statement with the result that three supposed exceptions were cited me.

The first case was that of a ten-acre piece in East Wenatchee which had been in alfalfa previous to setting the orchard, which was then five years old. About three-quarters of the place had been kept almost free from alfalfa and throughout this portion the rosette was rife. Many of the trees were so badly affected that the owner was seriously considering pulling them out entirely. Probably three-quarters of the trees showed rosette. On the other quarter the alfalfa had been permitted to volunteer and formed a fairly good stand. In this quarter of the tract one tree showed slight signs of rosette. The nearest bunch of alfalfa to this tree measured eight feet from the base and the second nearest fifteen. The second

exception cited was at Cashmere. Upon investigation it was found that the alfalfa had been in only two seasons. According to the statement of the owner the trees had been so badly rosetted that he had seriously considered pulling them out. During the two past years, following the seeding to alfalfa the condition of the trees had improved three hundred per cent and he believed that if they continued to improve another year as they had for the last two, the third year would find them entirely free from rosette. The third place was at Wenatchee, where there was rosette in an orchard which had been seeded to alfalfa for four years. There was no rosette whatever in the alfalfa, but it was abundant in a portion of the orchard not in alfalfa.

My statement was a rash one, but it was made after carefully following the results secured by the many ranchers of North-Central Washington who are using alfalfa as a cover crop. In this district there are 7,687 acres of orchard in which alfalfa is used as a cover crop. Clover and vetch are used with more or less satisfaction also, but the popularity of the alfalfa is illustrated by the fact that there are 458.5 acres of clover and 470 acres of vetch used, as compared to the 7687 acres of alfalfa. Very small plantings of peas, rye and sweet clover are also to be found. A cover crop is rarely used in an orchard before the trees reach the age of five years, but where it is planted earlier than that it is put in strips with six or seven-foot cultivation strips next to the tree rows; with the idea of seeding the cultivation strips when the trees are old enough to stand the close proximity of the alfalfa. In the few orchards where the alfalfa has been

put in too early the results have been discouraging.

It is generally considered that alfalfa causes a heavy drain upon the moisture supply during the first two years after seeding. After the roots have become deeply established and the tops are large enough to shade the ground, little if any more water is required than in clean cultivation. In fact, many places seem to indicate an actual saving of moisture. What would seem to be the ideal method of handling the crop is the constant discing in of the alfalfa tops, furrowing and irrigating until a blanket of vegetable mulch from the decaying alfalfa tops covers the entire surface of the ground. But few of the Wenatchee Valley ranchers use this method. Some cut one crop of hay, disc immediately after cutting, irrigate and then follow the first method for the remainder of the year. This gives excellent results. The greater number practice the cutting of two or three crops for hay and discing thoroughly in the spring to work in the late growth. In several orchards the alfalfa has been left unmolested to grow up and fall down; undisc'd, uncultivated and unfurrowed. One noted ex-

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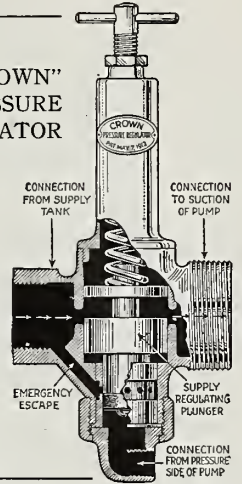


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REGULATOR

ample of this method is the Barney and Williams tract, which is often cited as the model of alfalfa results. In the latter method the alfalfa grows thickly enough to choke out the weeds and the expense of handling is reduced to a minimum.

Where the water supply is short the alfalfa may be planted in drill rows with cultivation strips between in order to get it established without seriously reducing the moisture supply. This method has been practiced in certain parts of the district with fairly satisfactory results and is recommended where it is desirable to get alfalfa established over extensive areas with poor watering facilities. Generally small or alternate strips are sowed solidly to alfalfa where the water supply is not sufficient to sow all at once. In any case where an orchard is affected with rosette I believe the one demonstrated sure-cure should be used. It may require that the alfalfa be put in drill rows or even drill row, but within three years following the seeding the rancher may be practically certain that his trees will not be bothered with rosette if the alfalfa is close and thick enough to penetrate to sufficient extent the rooting area of the trees.

### Southern Pacific Issues Book on Walnut Culture in Western Oregon

The Southern Pacific has recently issued a handsomely illustrated book, "Oregon Walnuts." The text was written by Mr. C. I. Lewis, Chief, Division of Horticulture, Oregon Agricultural College, Corvallis, Oregon. The cover

plate shows a collection of Oregon walnuts in natural colors. The interior pictures are taken from various walnut orchards throughout Western Oregon, and show, in addition to general views, technical illustrations of grafting, pruning, budding, etc.

Professor Lewis has covered the walnut industry very thoroughly in this book, and it should be in the hands of every walnut grower in this state. He treats first of the consumption of walnuts in the United States, and calls attention to the fact that there were imported into the United States last year over thirty million pounds of walnuts. Although Oregon produces but a small proportion of the walnuts grown in this country, nevertheless

over one-fourth of the young non-bearing walnut trees of the United States are right here in Oregon. Throughout the book are chapters on the following very interesting subjects: Choosing the Orchard, Sprouting the Seed, Grafting, Establishing the Orchard, Setting the Trees, Pruning, Diseases, Insects, Varieties of Walnuts. Copies of this book can be obtained from Southern Pacific agents, or by addressing Mr. John M. Scott, General Passenger Agent, Southern Pacific Company, Portland, Oregon.

Yellow apples are often better quality than red. If you don't think so, eat a Yellow Newtown Pippin and then try to eat a Ben Davis.

**T**HERE is no smoother ride in the world than a trip on the Union Pacific. That is one of the reasons why such a large proportion of regular transcontinental travelers habitually use their lines. They appreciate the comfort of the road which

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(INTERNATIONAL RAILWAY JOURNAL)  
Philadelphia — February, 1916



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The time is now just right for tying fruit trees. Tie the interior of the tree before the leaves are out and the exterior can be tied later. Orchard Yarn is put up in 5 lb. balls, 10 balls to a sack. This form is more convenient for use as the ball can be placed in the tree and by pulling the yarn from the inside never tangles. 2-ply contains about 100 feet per pound.

Sold by all merchants handling orchard supplies

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80x3 in.	\$ 8.60 \$2.30	36x4 in.	\$17.45 \$4.65
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82x3½ in.	12.75 3.20	38x4½ in.	22.50 6.75
84x4 in.	15.75 4.20	37x4½ in.	23.60 6.20
34x4 in.	16.70 4.35	37x5 in.	26.30 6.60

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## Marketing and Farm Credits

A new note is sounded in the book "Marketing and Farm Credits" for 1915, just off the press. The book contains the addresses given at the third annual sessions of the National Conference on Marketing and Farm Credits in joint program with the National Council of Farmers' Co-operative Associations. It contains 544 pages, is printed on good paper in clear type and is brimful of interesting facts about the two great business problems that farmers must solve for themselves, that every person on a farm or interested in farming should know. The price of the book is one dollar (postage 15 cents extra). Write Secretary Charles W. Holman, Washington Building, Madison, Wisconsin, for further information. (Adv.)

**Fighting the Rose Aphis.**—Rose growers who allow the flowers to be damaged by the ravages of the rose aphis, have only themselves to blame, according to the U. S. Department of Agriculture. Although the aphis is widespread over the entire country, as well as abroad, it is easily controlled. Careful spraying of the plants with solutions of nicotine will remove all danger and neither the expense nor the trouble involved is sufficiently great to be a real obstacle. The rose aphis is a small insect with a body about one-twelfth of an inch long. The young and some adult forms are wingless, but certain adults develop wings from time to time. The color varies from green to pink. By means of its slender beak the aphis sucks out the juices of the plant on whose buds and unfolding leaves it feeds. These, prevented from attaining their perfect form, become curled and distorted and the beauty of the flowers is in large measure ruined. Moreover, the aphis secretes a sweet sticky liquid called honeydew, which spoils the appearance of the foliage on which it is deposited. Under favorable conditions it propagates rapidly throughout the year. For example, some recent investigations conducted in California by the Department of Agriculture showed that one female gave birth to 48 young in six days. At the end of that time, the mother aphis was knocked from the rose and perished. This is not at all an uncommon fate. A heavy rain, which washes the insect away, is one of its most natural checks, though birds and other insects prey upon the aphis to a considerable extent. Extreme heat is also unfavorable to the aphis. The rose lover should not, however, depend upon nature to rid his garden of the pest. A 40-per-cent solution of nicotine is much surer and not much more trouble. One part of the solution to from 1,000 to 2,000 parts of water, with the addition of one pound of whale-oil soap to every 50 gallons of the mixture, is recommended in Bulletin 90, "The Rose Aphis," which the U. S. Department of Agriculture has just issued. A more convenient recipe, when there are only a few bushes to be treated, is a teaspoonful of 40-per-cent nicotine solution to two gallons of water and one-half ounce of whale-oil soap. The soap should be shaved fine and dissolved in hot water. Mixtures of this character should be applied as a fine, penetrating spray by means of a compressed-air sprayer or bucket pump. Such a pump costs from \$3.50 to \$15.00. Together with nicotine solutions it can usually be obtained at seed stores. If no pump is to be had, however, the infested twigs should be dipped in a pail of the solution. Care should be taken to use these solutions at strengths no greater than those mentioned above, since injury to the foliage may result through the use of too much soap, or mildew be favored by too strong a nicotine solution. Application of insecticides should be made on the first appearance of the pest, which varies from the time that the leaves are put forth until the buds begin to form. Applications should be repeated as found necessary.

**Spring Manuring.**—Now is the time to spread manure. The quicker the better, so that it can be plowed in with the early cultivation, giving it a chance to rot, which will not only enrich the soil but increase the humus, which helps make plant food more available.

## Fruit Pickers Ladders

Just what fruit growers have been looking for. Combines lightness and strength. Any length. Wide spread at bottom which prevents tipping. Cheaper than home-made ladders. Send for circulars and prices.

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 Portland, Oregon  
 R. H. Crozier, A. G. P. A.**

The Yakima Horticultural Union has voted to set aside one cent per box for the purpose of creating a fund with which to build a cold storage plant. It is estimated that the plant will cost about \$20,000 and will have the capacity for 100 carloads. In early summer the plant will be used for cherries, peaches and pears.



# When It's Nitrate Time for Peaches

Use broadcast 200 lbs. per acre this Spring after Blossom Time.

It takes Nitrate of Soda for Peach Results.

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**CELEBRATED C&S AXLE GREASE**  
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These buckets are handy and useful after the grease has been used. They serve to remind you that while using the C. & S. Axle Grease you had no trouble with the wheels.

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Absolute protection against gnawers and borers. Prevent trees from becoming skinned and bruised by cultivator or lawn mower. Made of elm veneer, chemically treated. Easily put on and will last until tree is beyond needing protection. Don't wait until some of your trees are killed—order Hawkeye Protectors now. Regular size 10 inches wide, 20 inches high. Price in lots of 100—1 cent apiece, in lots of 1000— $\frac{1}{2}$  cent apiece. Special sizes made to order. Write for circular and samples.

We make Fruit Baskets—get our prices.

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122 Main St., Burlington, Iowa

## Oil Company Throws Light on Carbon Deposits

If the amount of air entering the carburetor is not sufficient to insure complete combustion, we have what is known as a rich mixture, says a bulletin on carbon deposit and its causes, issued by the Standard Oil Company. This is a slow-burning mixture rather than an explosive one and will cause excessive carbon deposit. For example, if the wick of an oil burning lamp is turned too high, too much oil will be siphoned through the wick for the amount of air entering the lamp to form complete combustion. The lamp will smoke, and soot, which is carbon, will be deposited on the chimney. This is exactly what happens in the cylinders of a gas engine. The products of incomplete combustion of the gasoline deposit a certain amount of carbon in the combustion chamber. This carbon deposit will build up very much more quickly if it has a bed to build up on, such as would be produced by a lubricating oil which when exposed to the heat of explosion would leave a gummy deposit. Lieut. G. S. Bryan, U.S.N., has ably and correctly pointed out in his article on "Motor Cylinder Lubrication" that lubricating oils manufactured from paraffine base crudes deposit more carbon than lubricating oils manufactured from asphaltic base crudes. The reason for this is that paraffine base crudes contain paraffine wax, which cannot be entirely eliminated from the manufactured product.

E. J. Chubbuck Company are putting out a very attractive poster which is making quite a hit with the trade, illustrating their Ideal gopher trap. The color work is beautifully done, the panel being made from a photograph taken by a California farmer who has secured splendid results in destroying pocket gophers with the use of these traps.

Routledge Seed and Floral Co. have recently issued a very attractive seed catalog for 1916 containing some interesting and valuable information in reference to gardening, in addition to the lists of varieties, prices, etc. The same can be obtained by addressing Routledge Seed and Floral Co., 169 Second Street, Portland, Oregon.

**Dwarf Apples.**—The Experiment Station of Geneva, New York, after ten years' experience with Dwarf Apples, state that they are not considered commercially promising. Considerable information is given in connection with experiments regarding Dwarf Apples in Bulletin 406, issued by the Geneva Experiment Station.

Inspector De Sellem of Yakima is one of the very active inspectors who means what he says. He has already sent out notices advising fruitgrowers that the laws for spraying will be enforced during the coming season. If every inspector did as good work as De Sellem fruitgrowers would have fewer pests and diseases, secure cleaner crops and make more money.

Wenatchee fruitgrowers held a meeting in the Commercial Club rooms during February, object being to cut out consignment. A committee was appointed for the purpose of convincing the growers with the view of pledging them to sell for cash during the year 1916. It was stated that a special invitation will be given to dealers who are cash buyers to come to Wenatchee this year.

The British government, on account of the heavy expense incurred by the war, has up for consideration an embargo on all imports otherwise than actual necessities. Apples are included in the program.



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For sixteen years this seal has stood for protection to the shipper. Don't make a mistake of signing up your tonnage now—the "Distributors" and "Sales Agencies" will be just as eager to do business with you later—Don't let that worry you. Meantime investigate and see if our Service will not help you to do your own marketing—To investigate first is wise.

Our new Souvenir Calendar is now ready, containing photographic views of our New York and Chicago offices, extracts from the "BLUE BOOK" Trading Rules, Fruit and Produce Grades, Law of Commerce, Historical Review of the Organization and other information of practical every day value to shippers. It will be sent free to any shipper who handles five cars or more in a season, who will fill in and mail following coupon.

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## "Carco" KILLS MAGGOTS

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This remedy has been tried out at Experiment Stations by Horticultural Inspectors and leading growers, who are highly pleased with results.

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Growers of high grade nursery stock, guaranteed true-to-name. Breeders and importers of pure-bred Big Type Poland-China Hogs. Service boars, bred gilts and weaning pigs for sale.

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The Grand Prize, the highest award, bestowed upon Ghirardelli's Ground Chocolate by the Panama-Pacific Exposition, San Francisco 1915, is an additional testimonial to its unquestioned supremacy. The expert judges in this international competition found in

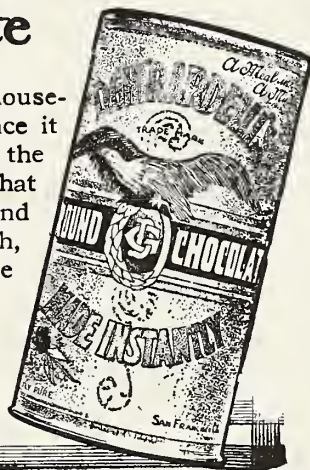
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the very qualities that have made it a household favorite on the Pacific Coast since it was originated by D. Ghirardelli in the early seventies. Not to know—and what is more, not to use—Ghirardelli's Ground Chocolate, is to be unmindful of health, economy and the appeal of a wholesome appetite.

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## Pests that Demand Immediate Control

By LeRoy Childs, Hood River Experiment Station

**T**HERE are several insect pests and plant diseases of our different orchard crops that can only be satisfactorily controlled by spraying before the foliage starts. The following suggestions are offered in controlling the more important pests of different fruit trees by early spraying:

Successful spraying depends upon taking advantage of the critical period in the life history of insect pest or plant disease almost entirely, and if the opportunity afforded is not taken advantage of during this usually very limited critical period, efforts made too early or too late are largely wasted. Spontaneous appearances of extremely damaging insect pests and plant diseases are usually quite rare. For the

most part the trouble increases from year to year, ultimately resulting in severe losses unless precautionary measures are undertaken. During these periods of increase the grower should familiarize himself with the troubles that should be expected the following year and put into practice the observations that he has made. Many factors, such as altitude, temperature and weather conditions make sweeping recommendations for the timing of sprays impossible, and the development or retarding of plant or insect growth is largely dependent upon these factors. Growers should know their individual variances and put them into practice.

Control of Pests of Peach.—The peach orchards in the valley are sub-

ject to several diseases and insects, control of which can be accomplished by spraying immediately with lime-sulphur solution. These are peach-leaf curl, San Jose scale and the peach worm. In Hood River the more severe of these troubles is the leaf curl, and in most localities the spray is almost necessary for the production of a good crop. Lime-sulphur applied at this time will prove of some benefit in controlling California peach blight, a disease which produces a gummy exudation on the twigs, ultimately killing them. For the complete control of this disease it is necessary to spray both in the fall before the rainy season sets in and again in the spring before the buds burst.

The best all-round application for peach at this time of the year is lime-sulphur, as it acts not only as an insecticide, destroying the scale and hibernating peach worm, but also a very effective fungicide. The material should be used at winter strength, that is, 1 to 10 of water. Bordeaux 6-6-50 will satisfactorily control the leaf curl, but will not be effective in destroying the scale or the peach worm. When spraying the peaches do not overlook the other deciduous trees, cherries, plums, apricots, etc., for they are all very agreeable food plants of San Jose scale and if neglected will serve as very effective breeding centers for further infestations.

Control of Pests of Pear.—Of the several insect pests of the pear there are only three or four that can be satisfactorily controlled by spraying at this time of the year. These are the pear-

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**THE PUDOR FARMS, Puyallup, Wash., Dept. C.**  
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The most practical, healthful, playtime garments ever invented for children 1 to 8 years of age. Made in one piece with drop back. Easily slipped on or off.

Easily washed. No tight elastic bands to stop circulation. Made in blue denim, and blue and white hickory stripes for all the year round. Also lighter weight, fast-color material in dark blue, cadet blue, tan or dark red for summer wear, all appropriately trimmed with fast-color galatea. Made in Dutch neck with elbow sleeves and high neck and long sleeves.

**75c the suit**

If your dealer cannot supply you, we will send them, charges prepaid on receipt of price, 75c each.

**A New FREE** If They Suit **Rip**  
Beware of Imitations. Look for the Two Horses on the Label.

Made by  
**Levi Strauss & Co., San Francisco**  
Awarded GRAND PRIZE at the P.P.I.E.



leaf blister mite, the cottony-maple scale, the San Jose scale and oyster-shell scale. The blister mite is not a true insect. It is related to the spiders, is very minute, and can be readily controlled by proper spraying. The mite attacks both fruit and foliage, malforming both. During the early summer infested leaves show puffy, patch-like spots on the under and upper surfaces which later in the season turn reddish-brown. The injury to fruit is of much the same order, destroying its marketability.

The period during which control measures can be satisfactorily applied is very limited. The mites over-winter underneath the bud scales in great numbers and are therefore out of reach of sprays if applied too early. As soon as the leaves start they immediately burrow into the leaf tissues and are soon again protected from a contact with spray. In view of these facts it is necessary to watch the growth of the trees very critically and make the applications as soon as most of the buds have burst, but before the leaves unfold. On account of the great range in elevation in the valley and the resulting differences in time at which trees come into foliage it will be impossible to give a definite recommendation as to the exact time to make the application. Growers should use their own judgment in this matter and thoroughly spray the trees with a good pressure. Use lime-sulphur 1-10, at which strength the San Jose and oyster-shell scale will be destroyed.

The cottony-maple scale is of very limited distribution in the valley and will usually be found attacking the Winted Nelis variety. For control use miscible oil 8 gallons to 100 gallons of water. This should be applied while the trees are dormant.

Control of Insect Pests of Apple.—There are several insect pests of the apple which demand attention this month. These are the leaf-roller, woolly aphis, San Jose scale and the oyster-shell scale. The scale insects are not generally distributed in all of the orchards in the valley and applications are recommended only in orchards where they are troublesome. The four insects mentioned must all be controlled during the dormant season, as material applied after the foliage is out cannot be used strong enough to kill the insects without seriously burning foliage and developing fruit.

For the leaf-roller and the woolly aphis miscible oils will be found to give the greatest degree of satisfaction. All orchardists in the Pine Grove section are urged to use oil this spring to destroy the egg masses of the leaf-roller. A thorough spraying for this insect will incidentally destroy all of the woolly aphis that are hit. In controlling the leaf-roller spraying is directed toward the destruction of the egg masses which will be found in brownish, pad-like patches on trunk, limbs and even the smaller twigs of not only apple but pear, cherry, plum and peach. In view of the fact that



Good harness deserves good care; keep the trimmings clean and bright with

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puts the "hop" into your car, gives you the quick "get-away", and the "pick-up" on the hills. It's because Red Crown is the unmixed, refinery gas, with extra power in every drop. At dealers everywhere and at our SERVICE STATIONS.

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## FRUIT GROWERS Dehydrate Your By-Products

It gives you a high grade quick selling product at a minimum cost. It makes a clean and natural tasting product. Dehydrated fruits and vegetables have been approved by the U. S. Government, while desiccated, dried and evaporated products have been rejected. There is but one Dehydrator manufactured in the West and it is the best By-Product machine ever devised. It is adapted to the individual grower, as it can be constructed to meet any and all requirements. It is fully covered by U. S. patents. Therefore, you are protected in its use.

The manufacturers of this Dehydrator have recently patented new and improved automatic labor-saving preparatory machinery which will further reduce the present low cost for the production of this product.

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RETAILERS OF

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NEMO CORSETS

**Strictly Cash—One Price to All**

insects deposit eggs on most all of our orchard trees, it will be well to spray all of the deciduous trees that an effective clean-up be obtained. Pruning away the long out-of-the-way branches will greatly aid in making a thorough application of the oil. The following formula is suggested for leaf-roller control:

Miscible oil, 6 gallons; water, 100 gallons.

If scale are in the orchard increase the oil to eight gallons. The oil does not have to be used as strong in controlling the woolly aphis. At this time of the year the young insects will be found in hibernation. In order to successfully pass the winter they secrete themselves in protected places under the rough bark of trunk and limbs and in old scars, so that in making the application extreme care must be exercised that all parts of the trees be covered. When applying the spray hold the nozzle close to the trunks and with a good pressure force the oil up under the old bark scales. Cover all limbs and branches as well. Use the following formula for woolly-aphis control:

Miscible oil, 4 gallons; whale-oil soap, 2 pounds; water, 100 gallons.

This is not strong enough to destroy the eggs of the leaf-roller or scale insects. If these are present use the preceding formula.

The San Jose scale and the oyster-shell scale can be controlled by using either winter strength lime-sulphur or strong emulsion of the miscible oil. As the oil can answer a dual or triple purpose in insect control, its use appears more advisable than the less expensive lime-sulphur, which will only destroy the scale insects. The following formulas are suggested for scale-insect control:

Lime-sulphur (32 degree), 10 gallons; water, 100 gallons; or, Miscible oil, 8 gallons; water, 100 gallons.

## Beekeeping and Fruit Growing

By Oscar Kazmeier, Kiel, Wisconsin.

NATURE having intended these two lines of work for their mutual benefit together, in fact what two lines will harmonize so well together as these two, and yet in years past and even today in some sections there is a strong antagonism between the beekeeper and fruitgrowers. It is a fact only too well known that the cross-fertilization of the fruit trees is beneficial to the fruitgrower, insuring a good setting of his fruit, while the nectar gathered by the bees will be beneficial to the beekeeper.

Experiments conducted by the various experiment stations have invariably found the bees to be a great agent in cross-fertilization of fruit trees, clovers, etc., and are recommending fruitgrowers to see that bees are in or near their orchards, or, better still, to have beeyard in connection to your fruit farm, and thereby realizing the benefits and profits from either side. A while ago the writer had the opportunity in overhearing a conversation

## 25 Per Cent Reduction

ON ALL Apple, Pear, Peach, Prune, Plum, Cherry, Apricot, Nut, Shade and Ornamental Trees, Berry Bearing Plants, Flowering Shrubs, Vines, Hedge Plants, Roses, etc., etc.

### We Need Room in Our Nurseries for Spring Planting

All Stock Clean, Healthy and Thrifty. Grown on virgin soil, two years from sage brush.

Most Complete Stock in the Northwest from which to select.

### All Stock True to Name

Send today for Special Price List and Descriptive Catalog

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Box 217 K  
Wapato, Wash.

## PORTLAND WHOLESALE NURSERY COMPANY

Rooms 6 & 7, 122½ Grand Ave., Portland, Oregon

Wholesalers of Nursery Stock and Nursery Supplies

A very complete line of

Fruit and Ornamental Trees, Shrubs, Vines, Etc.

**SPECIALTIES**

Clean Coast Grown Seedlings

Oregon Champion Gooseberries and

Write Now Perfection Currants Write Now

## Frost Damage Prevented

## BOLTON ORCHARD HEATERS

**29c each**

**Two-Gallon Capacity**

**Send for booklet**

## The Frost Prevention Co.

Merchants National Bank Bldg.

San Francisco, Cal.

## Northwest Fence & Supply Co.



MANUFACTURERS OF  
All kinds of ladders,  
orchard supplies,  
Bastian Pruners, lawn  
fence and gates

272-374 EAST OAK STREET  
CORNER UNION AVE.  
PORTLAND, OREGON

GET OUR PRICES NOW BETTER



between a few horticulturists who were discussing the value of bees in an orchard, one of them claiming he had been taking the best care of his orchard in years past, but never had been able to get a good crop from it until he placed some stands of bees in his orchard and was more than surprised at the bumper crops he got. It has been the writer's own observation that orchards situated close to apiaries had set a much larger per cent of fruit than those a few miles away from them. In the cross-fertilization of strawberries, cucumbers, etc., where the wind cannot aid in carrying the pollen from blossom to blossom, it is here where the insects must perform the work, especially the bees.

The harmful effects of bees in an orchard are few, if any. They are blamed for the puncturing of fruits, especially grapes, but through close observations it will be noticed that they only attack fruit already injured; they are also to some extent blamed for the spreading of the pear blight in a pear orchard, but according to Professor H. A. Surface of the Agricultural Department of Harrisburg, Pennsylvania, the pear blight often spreads without the invasion of bees. Furthermore, these are not the only sole agents of spreading the germs and should therefore not be condemned by the pear grower.

The greatest loss to the beekeeper is the spraying during fruit bloom, while all experiment stations are now recommending to spray when about three-quarters of the petals have fallen, for it has been found that any solution that is strong enough to kill the codling moth during full bloom, will also be harmful to the delicate reproductive organs of the flower. It is known that the nectar gathered from fruit bloom is generally only valuable to the beekeeper for coming so early in the season it stimulates the colony for brood rearing, thereby building it up into strong, rousing colonies, which are so essential in producing a big surplus from the basswood, clovers, buckwheat, etc.; and here again they are beneficial in the cross-fertilization of these plants. Hence it goes to prove that the horticulturist farmers and beekeepers must unite for their mutual benefit, for any advantage it offers to the bee redounds to the mutual good of all three.

Officers of Montana State Horticultural Society for 1916: President, M. L. Dean, Missoula; first vice president, F. B. Linfield, Bozeman; second vice president, W. B. George, Billings; third vice president, Mrs. A. C. Herbst, Libby; fourth vice president, Professor D. B. Swingle, Bozeman; fifth vice president, Mrs. Ben Kress, Hamilton; secretary-treasurer, Professor O. B. Whipple, Bozeman; trustees, C. C. Willis, I. D. O'Donnell, J. C. Wood, A. V. Platt, Mrs. Ben Kress, W. J. Crismas.

Fertilizers are recommended for vegetable gardens. Professor Boquet advises the use of stable manure and wood ashes, which can be used to good advantage for all crops except potatoes. There are many brands of commercial fertilizers on the market which are big factors in increasing the yields of vegetables. Nitrate is always very desirable in truck gardening.

## Planet Jr. Hand Cultivators

### The garden tools for big results

They are saving time, lightening labor, and producing better crops for over two million farmers and gardeners. Planet Jr tools last a life-time. Fully guaranteed. 72-page Catalog, free!

Describes over 70 tools including 12 entirely new ones, and improvements to our Seeders, Wheel-Hoes, Horse Hoes, Harrows, and Corn, Potato, Orchard, and Beet Riding-Cultivators. Write for it today!

**S L Allen & Co Box 1106U Philadelphia**

**No. 4 Planet Jr Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator and Plow** pays for itself in a single season in the family garden as well as in larger acreage. Sows all garden seeds (in drills or hills), plows, opens furrows and covers them, hoes and cultivates easily and thoroughly all through the season.

**No. 11 Planet Jr Combined Double and Single Wheel-Hoe, Cultivator, Plow and Rake.** Straddles crops till 20 inches high, then works between. The plows open furrows and cover them. The cultivator teeth work deep or shallow. The hoes are wonderful weed-killers. The rakes do fine cultivation and gather up trash. Unbreakable steel frame. Strong high steel wheels and specially hardened steels—new this year. The greatest hand-cultivating tool in the world.

We make 32 styles of seed-drills and wheel-hoes—various prices.



## Don't Pot Your Trees



*Drawn from actual photo.—Note marked difference in growth between tree planted in blasted hole and tree planted in spade-dug hole.*

### Practical Proofs

E. J. BARKER, Beech Bluff, Tenn., says: "I would not set trees without first subsoiling with explosives, even if it cost four times the amount."

J. C. SAYLOR, Penna., says: "Blasted trees the finest in the orchard."

O. C. LANGFIELD, Calif., says: "Planted 14,000 trees with dynamite—advanced value of land from \$15 to \$200 per acre in less than a year."

Spade-dug holes, like pots, confine and cramp the roots. Set your trees out in blasted holes. Stop the big percentage of early losses. Make them grow sturdy, hearty and fast. Cash in on your investment quicker by getting earlier yields.



### Red Cross Farm Powder

lightens labor and increases profits. It loosens the earth, makes better rootage and provides increased nourishment for young trees. It rejuvenates old trees and makes them bear.

### GET THIS BIG BOOK FREE

Describes the use of Red Cross Farm Powder for tree planting, land clearing, subsoiling, ditching and many other things. Tells what this modern method has done for hundreds of orchardists and farmers. Write to-day for this interesting 188-page

Handbook of Explosives No. 338-F

**E. I. du Pont de Nemours & Co.**  
Wilmington, Delaware

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The hotel which made Portland, Oregon, famous  
Most Desirably Located. In the Center of Shopping and Theatre District  
Covers a City Block.

**Broadway, Sixth, Morrison and Yamhill Streets**  
European Plan—\$1.00 per day and upward;

Write for Portland Hotel Booklet.

**GEO. C. OBER, Manager**



# Dow Arsenate of Lead

This is a material that has given the very best of satisfaction wherever it has been used

and where quality and price are the deciding factors. For the fourth consecutive season we have had the business of the State Forester of Massachusetts, which alone represents a tonnage of close to one and a half million pounds. This is a contract awarded only to the parties able to make the best quality and price consistent with that quality. From the standpoint of quality and price we offer you in Dow Arsenate of Lead the best that you can procure.

Our tremendous increase in business from year to year among the fruit growers of the United States and also foreign countries is the best evidence we can offer you that Dow Lead does better work. We can supply you from five different distributing centers in the Northwest. If you are not in touch with any one of them write us.

**The Dow Chemical Company**  
MIDLAND, MICHIGAN

## Statement of Distribution N. W. Box Apples

By Chas. J. Brand, Chief Markets and Rural Organization U. S. Department of Agriculture

THE following statement of the distribution of apple shipments from the four Northwestern states, Washington, Oregon, Idaho and Montana, made at the request of the shippers and growers, is based on the voluntary reports of the shippers and the railroads.

From the waybills furnished by the railroad station agents it was ascertained that 461 shippers, large and small, participated in the distribution of the apple crop. This number includes growers' organizations, local cash-buying firms, local representatives of Eastern wholesale houses, local mercantile houses, local brokers, traveling brokers and growers. Among the grow-

ers were those who had large commercial orchards and those who could ship only one car.

The total number of cars reported by the railroads represents the actual number of cars shipped out of the territory, as taken from the best source of information available.

The total number of cars reported by shippers is the number of cars upon which information has been received from the shippers reporting cars which have actually been delivered at the destinations indicated.

The incompleteness of the information is due to the fact that a great many of the shippers and organizations have not received their returns and that data cannot be included in this review until received by this office. At the end of the shipping season, when more complete data are available, it may be possible to issue another statement.

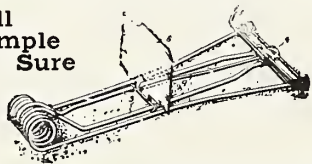
Column A indicates the number of cars of apples reported by the railroads as moving to the destinations shown below. Column B shows the number reported by the shippers.

	A	B
<b>Alabama</b>		
Birmingham	15	14
Montgomery	1	1
<b>Arizona</b>		
Bisbee	8	8
Douglas	3	1
Phoenix	20	11
Tucson	1	2
Miscellaneous	2	1
<b>Arkansas</b>		
Little Rock	1	4
Miscellaneous	2	2
<b>California</b>		
Fresno	13	6
Lodi	5	3
Los Angeles	290	266
Oakland	28	26
Sacramento	13	8
San Diego	31	37
San Francisco	329	162
Stockton	11	3
Miscellaneous	3	0
<b>Colorado</b>		
Denver	383	73
Colorado Springs	6	6
Pueblo	1	3
Trinidad	6	7
Wray	2	0
Miscellaneous	6	3
<b>Connecticut</b>		
Bridgeport	3	2
Hartford	5	4
New London	2	1
<b>Georgia</b>		
Rome	3	0
<b>Idaho</b>		
Moscow	5	0
Pocatello	11	0
Wallace	8	3
Miscellaneous	25	12

<b>Illinois</b>	A	B
Chicago	704	25
Rockford	5	
Miscellaneous	4	
<b>Indiana</b>		
Indianapolis	2	
Miscellaneous	1	
<b>Iowa</b>		
Burlington	4	
Cedar Rapids	2	
Davenport	3	
Des Moines	21	26
Mason City	3	
Sioux City	31	14
Waterloo	6	
Miscellaneous	20	
<b>Kansas</b>		
Dodge City	3	1
Independence	2	4
Salina	5	4
Wichita	7	7
Miscellaneous	10	8

## Macabee Gopher Trap

Small  
Simple  
Sure



At all dealers. If your dealer does not handle it, send **20 Cents in Stamps** and mention your dealer's name and get sample by mail, postage paid. Write for prices in larger quantities delivered free by parcel post.

**Z. A. MACABEE**  
Box P Los Gatos, California

## Rides Like An Auto

The New Patented Harvey Bolster Springs are made just like the finest automobile springs. They absorb all the bumps, jars and jerks of rough, uneven roads, and change an ordinary wagon into an easy-riding spring wagon. A set on your wagon will enable you to get your perishable produce to market in first class condition always. **Insist on Harvey's.** If your dealer can't supply you write us for free catalog and price list.



**YOU CAN EARN \$50.00 PER DAY** with the Gearless Improved Standard Well Drilling Machine. Drills through any formation. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 21-2 gallons distillate at 9¢ per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine ignition. Catalogue W-8.

REIERSON MACHINERY CO., Mfgs., 1295-97 Hood St., Portland, Ore.

## TREESAVIN

Treesavin protects your trees against all crawling insects, worms and ants, but does not hinder respiration of the tree "skin" as do sticky resinous mixtures when painted on. Treesavin lasts a whole season. Indispensable for preventing "bleeding" from cuts and wounds. Easily removed and replaced.

While it does better work than any other sticky tree protector, Treesavin is cheaper to use and takes one-tenth the time to apply. Made in rolls 4 in. wide, 10 yds. long, sufficient to cover 9 trees 12 in. diameter. If your dealer can't supply you, order direct. Write for catalog and descriptive matter.

Per box, 50 cents; three boxes, \$1.40; six boxes, \$2.00; twelve boxes, \$5.00.

Berg & Beard Mfg. Co., 12-14 Steuben St., Brooklyn, N. Y.

## FREE SAMPLE OREGON GROWN SEED OATS

100 TO 125 BU PER ACRE  
SPRING SOWN

**YOU CAN REAP TWICE THE CROP FROM HALF THE LAND**

**FIRST PRIZE**  
NORTH PACIFIC LAND SHOWS 1913-14-15  
OREGON STATE FAIR  
EVERY YEAR SINCE 1902  
\$700.00 IN PRIZES  
BIG EXPOSITIONS IN U.S. AND CANADA FROM ONE EXHIBIT ONE SEASON

**PRICES:**  
4 LBS. \$1 PREPARED  
100 LBS. \$4 F. O. B. PORTLAND

**1916 CATALOG** of Diamond Quality Tested Seeds is a reliable and safe guide to your purchases and a reference book every grower should have. Ask for Catalog No. 200

FOR YOUR SAMPLE WRITE TO  
**PORTLAND SEED COMPANY**  
PORTLAND, OREGON

PORTLAND SEED COMPANY  
Diamond Seed Quality  
TRADE MARK



Kentucky	4	B
Lexington	1	1
Louisville	8	7
Louisiana		
Annings	0	1
Lake Charles	1	1
New Orleans	51	73
Shreveport	14	19
Maine		
Bangor	3	2
Portland	1	5
Miscellaneous	1	1
Maryland		
Baltimore	54	42
Massachusetts		
Boston	257	182
Brockton	1	1
Springfield	2	2
Worcester	2	2
Michigan		
Detroit	22	17
Grand Rapids	1	0
Miscellaneous	4	2
Minnesota		
Brookston	17	17
Duluth	104	36
Minneapolis	332	94
St. Paul	127	28
Miscellaneous	59	31
Missouri		
Joplin	2	4
Kansas City	81	77
St. Louis	47	10
Miscellaneous	1	0
Montana		
Anaconda	15	10
Baker	5	5
Billings	40	21
Bozeman	9	7
Butte	137	54
Chinook	4	2
Cut Bank	55	2
Deer Lodge	5	3
Dillon	7	3
Glasgow	31	14
Glendive	17	5
Great Falls	86	38
Harlowtown	5	1
Havre	13	7
Helena	34	16
Lewistown	28	7
Livingston	7	6
Miles City	20	14
Missoula	17	2
Outlook	5	2
Roundup	13	8
Shelby	6	1
Sidney	4	2
Sweetgrass	4	2
Whitefish	27	0
Malta	4	1
Miscellaneous	110	61
Nebraska		
Alliance	4	0
Crawford	6	3
Grand Island	13	10
Lincoln	32	36
North Platte	203	9
Omaha	166	31
Miscellaneous	9	7
New Hampshire		
Manchester	1	1
New Jersey		
Jersey City	13	0
New York		
Buffalo	15	12
Elmira	144	92
LeRoy	35	18
New York	1024	611
Rochester	6	0
Suspension Bridge	249	12
Miscellaneous	4	2
North Dakota		
Beach	19	3
Bismarek	89	55
Bowman	4	3
Crosby	5	4
Devils Lake	5	2
Dickinson	15	4
Drake	6	6
Fargo	57	33
Grand Forks	40	71
Jamestown	22	17
Langdon	4	1
Leeds	10	0
Mandan	9	1
Minot	261	34
Portal	4	4
Ray	4	0
Rugby	25	13
Valley City	5	5
Wahpeton	32	28
Williston	57	26
Miscellaneous	153	54
Ohio		
Cincinnati	7	10
Cleveland	35	11
Toledo	2	4
Miscellaneous	2	2
Oklahoma		
Enid	37	5
McAlester	5	8
Muskogee	7	7
Tulsa	8	11
Oklahoma City	36	26
Miscellaneous	18	28



### IT PAYS TO SPRAY MYERS WAY

Take care of your fruit trees—They are a wonderful source of profit—Every tree in your yard or orchard should pay dividends in perfect fruit through protection by spraying MYERS WAY

#### MYERS SPRAY PUMPS

Bucket, Barrel and Power, and Nozzles and Accessories are all proven and cover every spraying need—A Pioneer Line of Standard Pumps—guaranteed for effective spraying, and equally serviceable for whitewashing, disinfecting, sprinkling, fighting fires, etc.

Our Spray Catalog—just off the press—shows complete line, and gives late Spray Calendar with instructions How and When to Spray Your copy is waiting—write today for it and ask for name of our dealer

F. E. MYERS & BRO. 120 Orange St. ASHLAND, OHIO

PUMPS—HAY TOOLS—DOOR-HANGERS



### Where Good Tillage Pays

Work close with the California Orchard Plow

The yield and quality of your fruit depend largely upon the tillage your orchard receives. Choice fruits command high prices. You can't work among the trees and under the branches with ordinary tools. It will pay you big to learn about the

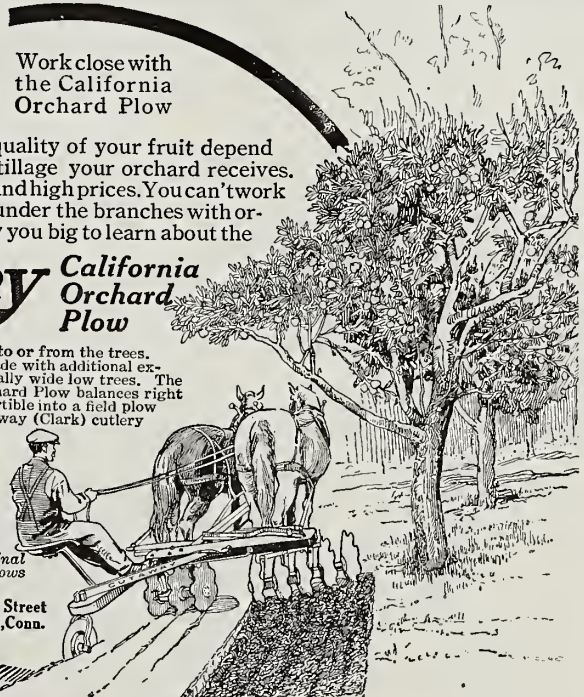
### Cutaway (CLARK)

California Orchard Plow

Reversible—turns the soil either to or from the trees. Extends under branches. Also made with additional extension, when desired, for unusually wide low trees. The Cutaway (Clark) California Orchard Plow balances right—there is no side-draft. Convertible into a field plow for general farm use. Has Cutaway (Clark) cutlery steel disks, forged sharp. It will improve your fruit-crop. One of the many Cutaway (Clark) tools. If not at your dealer's write direct. Write for our free book, 'The Soil and Its Tillage.'

#### The Cutaway Harrow Co.

Maker of the original CLARK disk harrows and plows  
4013 Main Street  
Higganum, Conn.



Save Time. Write for Catalogs

MITCHELL, LEWIS & STAVEL CO.

PORTLAND, ORE. — SPOKANE, WASH.

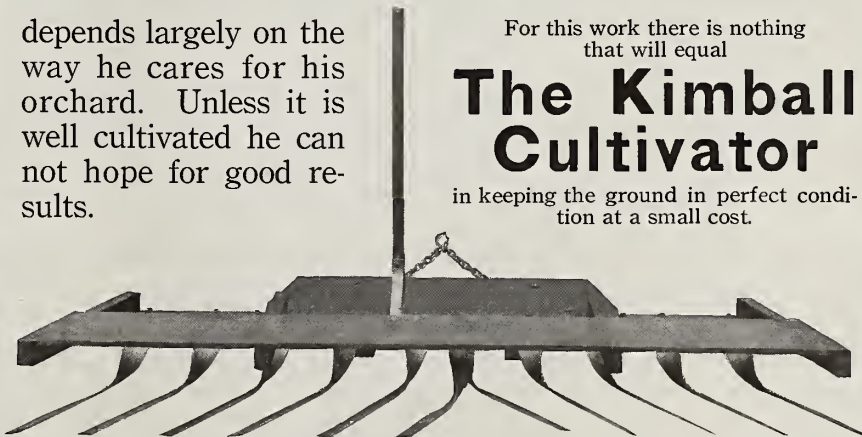
### The Success of a Fruit Grower

depends largely on the way he cares for his orchard. Unless it is well cultivated he can not hope for good results.

For this work there is nothing that will equal

### The Kimball Cultivator

in keeping the ground in perfect condition at a small cost.



The price is in reach of the small grower and can be bought from your local dealer or from

**W. A. JOHNSTON, Manufacturer**  
THE DALLES, OREGON





## Use Tree Tanglefoot

on Shade and Orchard Trees against Gypsy, Brown-tail and Tussock Caterpillars, Canker Worms, Climbing Cut Worms and Ants. It is equally effective against any crawling insects.

### Band Trees About Two Weeks Before Insects Appear to Get Best Results

Easily applied with wooden paddle. One pound makes about 10 lineal feet of band. One application stays sticky 3 months and longer—outlasting 10 to 20 times any other substance. Remains effective rain or shine. Won't soften—won't run or melt, yet always elastic, expanding with growth of tree. No mixing, simply open can and use. Will not injure trees.

### For Tree Surgery

Tree Tanglefoot is superior to anything on the market—it is the best application after pruning or trimming. It will water-proof the crotch of a tree, or a cavity, or wound in a tree, when nothing else will do it.

### Sold by All First-Class Dealers

1-lb. cans 35c; 3-lb. cans \$1.00; 10-lb. cans \$3.00; 20-lb. cans \$5.50, and 25-lb. wooden pails \$6.75.

Write today for illustrated booklet on Leaf-eating Insects. Mailed free. (55)

**THE O. & W. THUM COMPANY**  
135 Straight Ave., Grand Rapids, Mich.

Manufacturers of  
Tanglefoot Fly Paper and Tree Tanglefoot

Washington	A	B
Aberdeen	10	1
Everett	30	2
Seattle	438	42
Spokane	228	63
Tacoma	39	5
Miscellaneous	43	3
Wisconsin		
Milwaukee	51	17
Miscellaneous	5	3
Wyoming		
Cheyenne	94	5
Diamondville	4	1
Laramie	12	1
Rock Springs	6	3
Sheridan	11	14
Miscellaneous	37	18
District of Columbia		
Washington	20	16
Alaska	0	2
Alberta, Canada	147	48
British Columbia	147	46
Manitoba	45	36
Australia	34	33
Saskatchewan	199	63
Ontario	15	17
Quebec	5	9
Hawaii	1	1
Totals	9407	4313

Of the above total 254 cars were exported to Europe from Boston, New York, Philadelphia and Baltimore, as reported by the railroads. One car was also reported with its destination in South America, and two cars for South Africa.

In the tabulations for Montana and North Dakota the totals designated "Miscellaneous" represent seventy-one and ninety-six destinations, respectively, to which less than four cars each were billed.

The total of column B represents the number of cars upon which reports were received both from the shippers and the railroads. The total of column A includes that of column B.

# "BLUE RIBBON"

(EXTRA FANCY)

# "RED RIBBON"

(FANCY)

## Quality Brands of Yakima Apples

When ordering apples specify Blue Ribbon Brand and be assured of the best the market affords. All apples packed under our personal supervision and inspection.

WRITE FOR INFORMATION  
AND PRICES

## Yakima County Horticultural Union

FRED EBERLE, Manager

NORTH YAKIMA, WASHINGTON

Oregon	A	B	Texas	A	B
Portland	80	8	Amarillo	23	6
Miscellaneous	14	3	Beaumont	25	17
Pennsylvania			Corpus Christi	6	2
Philadelphia	71	27	Dallas	63	33
Pittsburg	73	86	El Paso	13	9
Miscellaneous	2	1	Fort Worth	96	72
Rhode Island			Galveston	4	11
Providence	9	14	Houston	52	40
South Dakota			San Antonio	20	28
Aberdeen	47	33	Texarkana	4	3
Deadwood	19	15	Waco	25	26
Huron	3	1	Miscellaneous	98	74
Mitchell	7	10	Utah		
Rapid City	4	4	Ogden	5	0
Sioux Falls	17	3	Salt Lake City	14	16
Miscellaneous	28	13	Miscellaneous	2	0
Tennessee			Virginia		
Memphis	10	8	Norfolk	2	2
Nashville	51	12	West Virginia		
Miscellaneous	3	1	Charleston	3	3
			Miscellaneous	1	1

# WESTROBAC

(Soil Bacteria)

Awarded Gold Medal at the  
Panama-Pacific Exposition

Will increase your crops and maintain your soil fertility. Thru a cover crop will produce more humus and nitrogen than you can otherwise get, thus insuring larger and better fruit at the small expense of **\$2.00 per can** f.o.b. laboratory, sufficient for one acre.

### Garden Size Packages

To those who have small plantings—less than one acre—we can now supply Bacteria in containers large enough for an area of one-fourth acre.

These are put up for Lawns and Gardens only in the following varieties:

**Sweet Peas Garden Beans**  
**Garden Peas Clover for Lawns**

Price per tube, mailed to any part of the United States

**Fifty Cents**

Let us tell you—write for literature (without cost)

**Chas. L. Mastick Co.**

74 Front St., Portland, Ore.

Northwestern Representatives  
**WESTERN SOIL BACTERIA CO.**



## The Newtown Pippin

edney F. Brown in Country Gentleman, Feb. 1, 1916

HOW many apple growers are acquainted with the romantic history of the Newtown Pippin? The existence of this variety alone was directly responsible for the establishment of our great export trade to Great Britain, a business that has been developed within the last hundred years by such tremendous strides that we now mention it in terms of millions of barrels annually.

About two centuries ago a seedling apple tree sprang up on the edge of a swamp in the neighborhood of the village of Newtown, Long Island. From what variety of apple that seed came we cannot tell. This seedling was allowed to grow, unmolested, ignored, as such trees are, until one day a stranger passing by saw and tasted some of the fruit from this tree. He found the flavor better than anything he had ever tasted.

After this discovery the fame of the new apple spread, and scions were taken from the parent tree to found new orchards up and down the coast. The great Hudson River Valley orchards were the children of this tree.

So much of the origin of the Newtown. Next comes its introduction into England.

In 1758 a box of Newtown Pippins was sent to Benjamin Franklin, our representative in England. He gave some to his friend, the distinguished English botanist and natural philosopher, Peter Collinson, who then brought scions into England. The trees had but meager success in English orchards, but the pippins from America were immensely popular in the markets of London and other English cities.

Though to Franklin must be given the honor of introducing American apples to the English people, the export trade was really inaugurated through the efforts of Andrew Stevenson, of Albemarle County, Virginia, who was minister to the Court of St. James in the first year of Queen Victoria's reign. While in England he had pippins sent from home for his own use, and he presented several barrels to the queen, who was so much pleased with the excellent quality and flavor of the apples that she rewarded Stevenson's courtesy by having the small import duty on apples removed.

Since then the pippin has become steadily more and more popular in the English markets, selling for large sums during the middle of the last century. A specific instance may be of interest at this time, when fruit growers have to be contented with three or four dollars a barrel for excellent apples.

Robert Pell, of Ulster County, New York, owned in 1845 an orchard containing a large number of Newtown Pippin trees. They yielded that year a crop which sold in the London market for as high as twenty-one dollars a barrel! The English nobility bought these apples for their tables at the startling price of one guinea a dozen—forty-two cents apiece!



WON  
**HIGHEST  
AWARD**  
PANAMA-PACIFIC  
INTERNATIONAL  
EXPOSITION  
SAN FRANCISCO  
1915  
DEPARTMENT OF AGRICULTURE

## For Growing Bigger Crops



International  
Harvester  
Tillage  
Implements

**T**HE better your seed beds the more money you make from the same acreage. The best seed beds are made with **International Harvester** disk harrows, spring-tooth harrows, and peg-tooth harrows. Our tillage catalogues explain fully, but read here a few reasons why these machines give the best field service:

**Disk harrows** have adjustable snubbing blocks for making the gangs level, and bowed set-lever bars to keep them level when the angle of the gangs is changed. The bearings are especially designed to avoid all unnecessary friction, and make the harrows that much easier for the horses to pull.

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This is but a brief account of the spectacular history of the original Newtown Pippin. The old tree stood, almost within the memory of those still living, on the edge of the swamp near the Long Island village after which it was named. It lived a most useful life and achieved greatness, for men from near and far came to take scions from this famous tree, once an unnoticed seedling, which died for the cause, being literally cut to pieces by scion seekers.

### Tomato Blight A Serious Menace to Tomato Industry

By F. D. Heald, Professor Plant Pathology, Washington State College, and Plant Pathologist of the Washington Experiment Station.

Continued from last issue

Rhizoctonia is a cosmopolitan fungus of omnivorous habits. As a damping-off fungus of various crop plants, it is known from all parts of the world. It has been reported by various investigators as parasitic upon the following: Peas, beans, clover, alfalfa and other leguminous crops; potato, tomato and egg plant; beets, carrots, celery, lettuce, radish, blackberry; cotton and okra; ornamental asparagus, china aster, carnation, sweet william, violet, verbena, hydrangea, candytuft, sage, phlox, begonia, coleus and snapdragon; lambs quarters, tumble weed and pig weed. It is important to note that Rhizoctonia has not been known to attack any cereals or other species of the grass family.

The Rhizoctonia disease has been found in Washington during the past season in severe form upon tomatoes, potatoes, beans, peas, cucumbers, peppers and strawberries. As a tomato and a potato trouble it has a state-wide distribution. Many bean failures in the Snake and Columbia Valleys are undoubtedly due to this disease. The symptomatology of the disease on the various hosts differs somewhat, but the causal organism can always be found upon the root system of the affected plants. The establishment of the fact that the "tomato blight" is due to Rhizoctonia, the same fungus which produces a very similar disease upon potatoes and many other plants, marks a most important advance in our knowledge. It seems probable that potatoes have been responsible for the introduction and spread of this disease more than any other crop, since tubers from an infected crop may carry the fungus.

For tomatoes there are only two possible sources of the fungus: First, a general presence of Rhizoctonia in the soil, due to the previous occurrence of the disease, either upon tomatoes or some other crop; second, the use of an infected soil for the seed bed in which the tomato plants are grown.

#### Suggestions for the Control of Rhizoctonia of Tomatoes

Since the fungus is confined in the main to the roots and basal portion of the stem any treatment with fungicides would be useless. The behavior of



Rhizoctonia on the various hosts suggests nothing of promise along the line of selection of varieties for resistance. While some varietal differences have been noted, the outlook is not hopeful, and it is not probable that highly resistant or immune varieties can be obtained by either breeding or selection. Cultural practices then must be resorted to in the control of this disease, and the following tentative suggestions are presented:

1. Use clean soil free from Rhizoctonia for the growth of tomato plants if they are to be transplanted, or if the soil is infected use some method of sterilization.

2. Avoid ground upon which potatoes have been grown during the past four or five years. Give attention to the possible occurrence of the disease on some other crop that might have infected the soil. Cereals and other grasses are never attacked by Rhizoctonia.

3. Practice a culture method that will supply the growing plants with an abundance of moisture. Lack of moisture increases the severity of the disease, since the fungus is constantly cutting down the supply of absorbing roots, and so making it more difficult for the plant to get sufficient water. Good cultivation for the aeration of the soil is also an important factor.

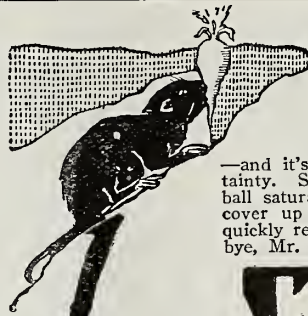
4. Use a liberal amount of fertilizer so as to stimulate the growth of the plants, and if the soil is known to be acid, correct this acidity by the application of lime. Rhizoctonia grows better in an acid soil than in those which are neutral or alkaline.

5. In transplanting to the field do not set the plants too shallow. Deep setting gives a greater opportunity for the development of adventitious fibrous roots to take the place of those killed by the fungus. It may even be advisable to set the plants in shallow trenches and gradually fill around them with successive cultivations.

6. Growing the plants in the field to avoid transplanting is sometimes of value. Injury to the root system in transplanting does not allow the entrance of the fungus, but retards the development of the young plant, without affecting the advance of the fungus. Carefully transplanted plants that suffer little or no check in their growth are more likely to keep ahead of the fungus.

7. In case a soil infection of a field is suspected, early fall plowing with frequent cultivation is suggested. It seems probable that the aeration of the soil by frequent cultivation lessens the amount of the fungus that will remain alive. Some growers have used this practice with excellent results.

Careful attention to as many of the suggestions for control as possible will very materially lessen the severity of the disease. In fact, experienced growers are learning that the tomato blight can be controlled, or at least reduced to a negligible factor.



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invented by  
U. S. officials.  
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to burrow.

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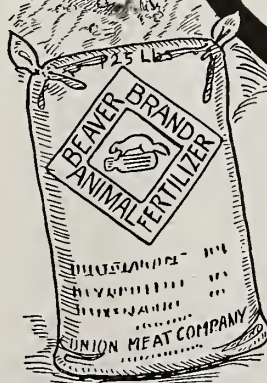
Sustenance, such as fruit trees demand, comes from soils that contain a good supply of Potash and Phosphoric Acid, particularly the latter. Increase the **quantity** and **quality** of your fruit—feed your trees

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A fertilizer of **proven** value made for Northwest soils by the pioneer fertilizer manufacturers of the Northwest. Rich in the constituent elements that revive strength—enable the next crop to feed upon the sustenance necessary for a good yield.

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### Kind of Spray Nozzle to Use

It takes a definite amount of material to spray a tree properly, whether applied as a mist or as a spray or whether applied by high or by low pressure. Therefore, to be economical in application a nozzle should not be wasteful of time, effort or material. The spray must be applied quickly, for the labor cost often amounts to more than the cost of the material used. The spray tank is an expensive storage place for the liquid. Orchard nozzles vary in capacity from a quart to three gallons per minute, yet are often used without regard to size, even though it is self-evident that it costs twice as much to spray with a gallon-a-minute nozzle as with a two-gallon nozzle. Hence from the standpoint of labor-cost as large a nozzle or as many nozzles should be used as the pump is capable of maintaining.

Secondly, the effective range of a nozzle should be as great as possible. If one nozzle spends it force four feet away and another reaches through eight feet it takes twice as much effort to spray with the former as with the latter. Mist spray nozzles have a short range, for the resistance of the air quickly checks the momentum of their fine particles. It is pertinent to ask why high pressure should be demanded in a pump if a nozzle is selected which checks the pressure. The idea of a "penetration mist" is fallacious.

Thirdly, the nozzle must not be wasteful of material. This factor often makes a good talking point until carefully scrutinized. Some nozzles throw a hollow cone of mist; others project a flat sheet of coarse spray. The latter are popularly regarded as the more wasteful of material, which assumption is based on their greater output. When they are used leisurely there is, of course, a waste of liquid, but the spray rod can be so manipulated as to utilize every drop of spray. The idea that a tree "peppered" with mist is better protected than one washed with spray is not founded on fact. Much of the liquid from a mist nozzle blows away without reaching the insect and is wasted, while the hollow cone, hitting around the mark, misses the aim as well as the purpose of the spraying.

Much of the confusion regarding nozzles has resulted from not appreciating the difference in the duties they are to perform. A nozzle intended to give a thin, uniform surface coating over foliage or bark might not answer in driving the spray into the bottom of the calyx cups, into the innermost crevices of rough bark, or behind swollen buds, or in penetrating aphid-curved leaves, or in shooting aside overhanging leaves or fruit to reach the concealments of insects and place the spray in necessary contact with their greasy bodies. To stand up under the hard test of final efficiency a nozzle must have penetrative force. Any kind of nozzle can reach the easy places; but to assure 100 per cent efficiency calls for a Clipper or Bordeaux type of nozzle.—Washington State Experiment Station Bulletin.



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want to fire  
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**P**RINCE ALBERT tobacco throws open the gates to every man fond of a pipe or a makin's cigarette—it's so *friendly!* Just makes smoke joy possible for all degrees of tender tongues and tastes, for the patented process by which Prince Albert is made cuts out bite and parch! And you can't get better proof than the fact that Prince Albert is today smoked not only throughout the United States, *but all over the world!*



On the reverse side of this tidy red tin you will read: "Process Patented July 30th, 1907," which has made three men smoke pipes where one smoked before!

First thing you do next, locate that old jimmy pipe or the makin's papers; invest 5c or 10c for a supply of P. A. And fall to like you are on the right track. For Prince Albert is better than the kindest word we ever have said about it. And you'll find that's a fact!

*You can buy Prince Albert everywhere in the toppy red bag, 5c; or the tidy red tin, 10c; in pound or half-pound tin humidors or in the handsome crystal-glass pound humidor with sponge-moistener top that keeps P. A. fit-as-a-thoroughbred!*

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